Ground Temperature Database for Northern Canada

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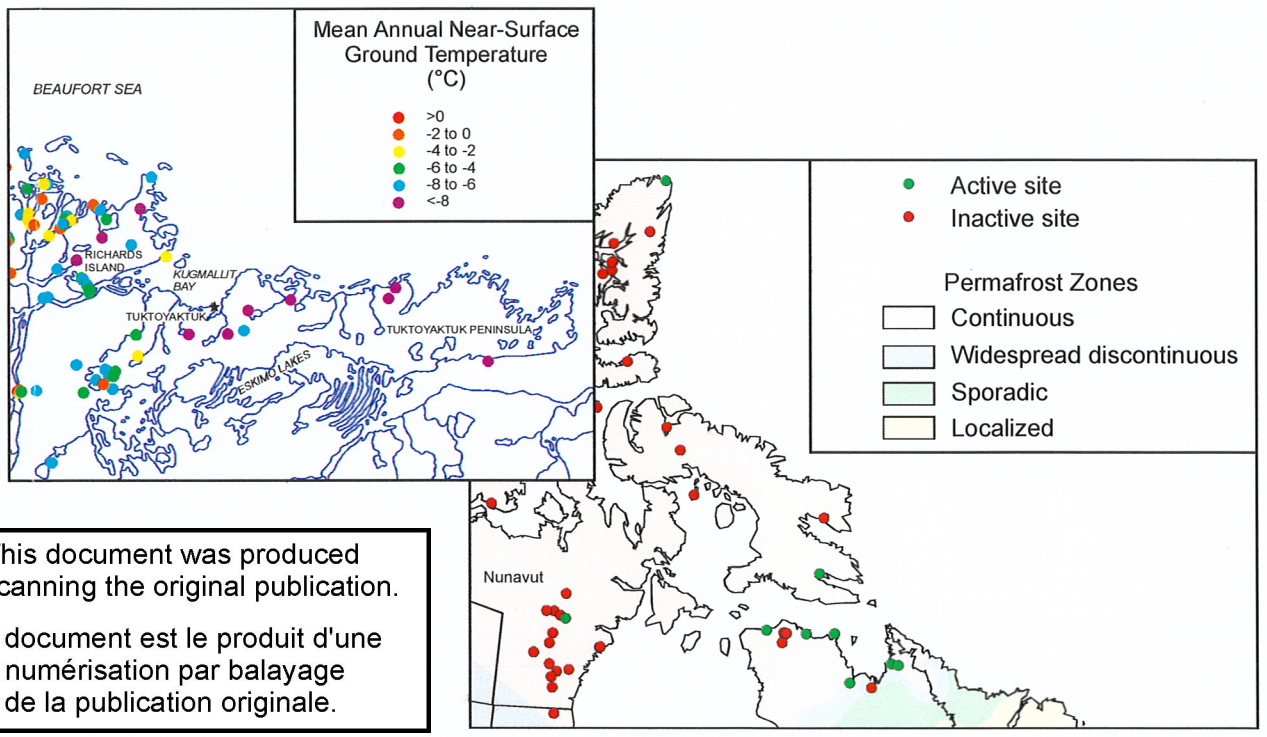

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ABSTRACT

A summary ground temperature database for northern Canada is presented. This national database includes publicly available information from published and unpublished sources for 656 sites, 526 of which are in the permafrost region. The majority of the sites are currently abandoned, with only about 17% active. Measurements at the inactive sites were generally recorded between 1960 and the mid 1980s. Although ground temperatures were measured over a number of years at many sites, the database compilation contains mainly summary information. No attempt has been made to include the entire time series data sets for either active or inactive sites. The reference for each site is provided and may be consulted for further information. Information on site characteristics such as air temperature, snow cover and vegetation which influence the ground temperature regime has also been compiled.

The entire database is presented digitally as an Excel spreadsheet. A series of maps and graphs illustrate site distribution, near-surface ground temperatures, and other attributes of the database.

INTRODUCTION

Publicly available data from published and unpublished sources have been compiled to produce a ground temperature database for northern Canada. The database builds upon an unpublished ground temperature database for northern Canada originally developed at the Geological Survey of Canada (GSC) in the mid 1980s by Young and Judge (1985). Ground temperature information for 656 sites, of which 526 are in the permafrost region is reported. Climatic data and information on site characteristics which influence the ground temperature at a particular site are also included.

The main features of the ground temperature regime are first described briefly below in order to define the terms that are used in the database. The database structure is then outlined, followed by a review of the sources of information. A general discussion of the data is presented, including a series of summary maps and tables. The database is provided on the accompanying diskette.

GROUND TEMPERATURE REGIME IN PERMAFROST

The ground temperature regime in an area with permafrost is illustrated in Figure 1. Permafrost exists where the ground temperature remains at or below a temperature of 0°C for at least two consecutive years (International Permafrost Association, 1998a). The permafrost base is defined by the position of the 0°C isotherm. Near the ground surface, ground temperatures rise above 0°C for part of the year. This seasonally thawed layer is called the active layer.

The maximum and minimum temperature experienced annually at each depth define the annual ground temperature envelope. The difference between the maximum and minimum ground temperature decreases with depth, and the level below which seasonal changes in ground temperature do not occur is referred to as the depth of zero annual amplitude. Below the level of zero annual amplitude, the temperature increases with depth due to the geothermal gradient. The mean annual ground temperature profile is defined by the average annual temperature at each depth. The mean annual ground surface temperature can be estimated by upward extrapolation of the geothermal gradient from the level of zero annual amplitude to the ground surface (Lunardini, 1981) provided the measured gradient is in equilibrium with surface conditions.

Further information on the nature and distribution of permafrost, the factors influencing the ground thermal regime, and the challenges permafrost presents to northern development can be found for example in Williams and Smith (1991), Heginbottom et al. (1995), French (1996), Burgess and Smith (in press), and Smith et al. (in press).

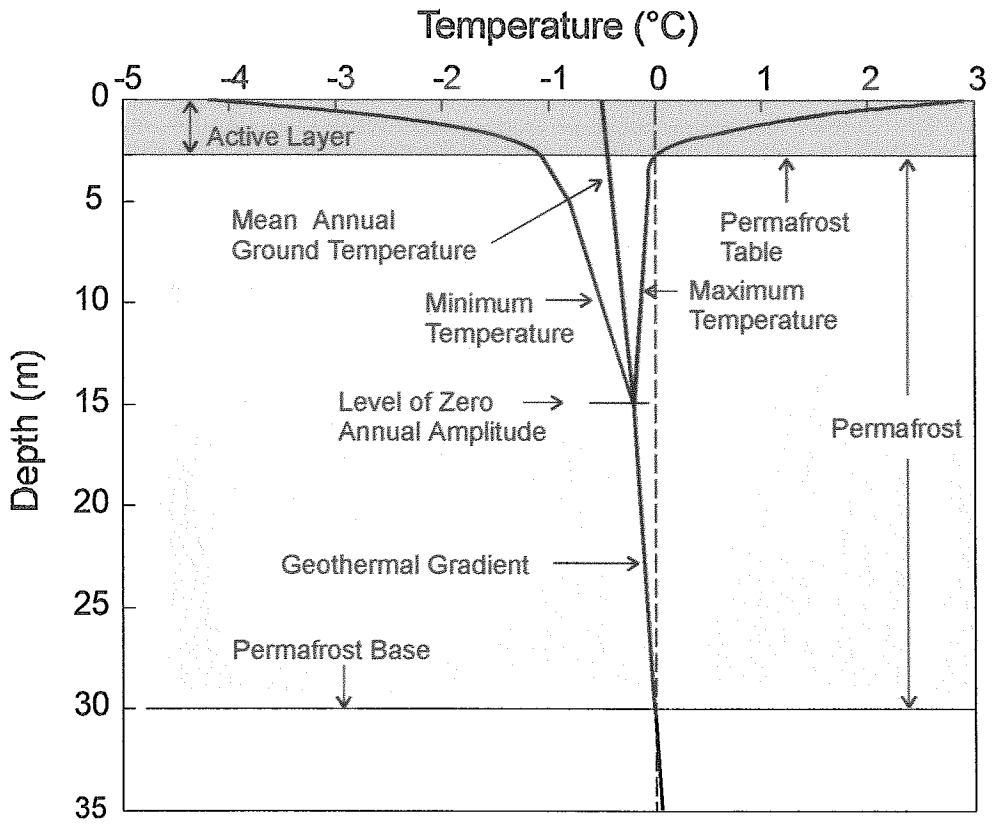

Figure 1. Features of the ground thermal regime in permafrost based on data from a Yellowknife site (data from Brown, 1973).

DATABASE STRUCTURE

The ground temperature database, developed using the Microsoft Excel spreadsheet program contains the following fields, each of which is described below:
Location and site; latitude and longitude; elevation; type of information; status of site; period; mean annual air temperature; average annual snowfall, month of maximum snowfall; maximum thickness and duration of snow cover; mean, maximum and minimum ground temperature at various depths; vegetation type; earth materials; active layer thickness; permafrost region; comments; source.

Database Fields

Site Location and Site Identifier

The location of the ground temperature measurement site was generally given a name by the relevant source of the information. Where no name was given, a general broad regional name was assigned to the entry. Some locations have measurements for more than one site. In these cases each site name (site identifier) as given in the original source has been included.

Latitude and Longitude

Latitude (°N) and longitude (°W) were usually given by the original source. This information was occasionally missing and had to be approximated from the given site description.

Elevation (m)

The elevation of each site is given in metres above sea level where available. There are a few offshore sites in the database and these are indicated by an elevation less than zero.

Type of Information

This field gives a general idea of the source of information. Eight categories are used:
AES - former Atmospheric Environment Service (now Meteorological Service of Canada), Environment Canada
AECL - Atomic Energy of Canada Limited
DBR - former Division of Building Research of National Research Council of Canada
EPB - former Earth Physics Branch of former Energy Mines and Resources (merged with Geological Survey of Canada in 1986 which is now part of Natural Resources Canada)
EBA - EBA Engineering Consultants Ltd.
GSC - Geological Survey of Canada, Natural Resources Canada
AgCan - Agriculture and Agri-Food Canada
Other - Includes sources such as Universities or private industry.

Status of Site

Most of the sites included in the database have been abandoned and are considered inactive (I) and temperature data are no longer being collected. To the best of our knowledge data

are still being collected at the present time at the sites classified as active (A). Database users may wish to check with the data source (author) to verify the status of the site.

Period

The period over which measurements were made is given when available. In the case of deep boreholes, greater than 125 m deep and drilled largely for hydrocarbon exploration, the thermal disturbance due to drilling may take up to several years to decay (Taylor and Judge, 1974). Temperature measurements were therefore often made over a period of several years until equilibrium temperatures were re-established or they could be calculated by extrapolation of a series of measurements (see discussion in next section on sources of information). At deep sites where equilibrium temperatures had not been re-established and could not be determined, the date of the last log is given. For deep boreholes where the equilibrium temperatures have been calculated, the period given represents the time over which well temperatures were measured.

For shallower boreholes, measurements were generally made several times throughout the year for a period of one year or more to obtain the annual cycle of temperature and to determine the ground temperature envelope, the mean annual temperature and the active layer.

Mean Annual Air Temperature (MAAT, °C)

The mean annual air temperature quoted in the original source has been included in the database. If this was not given, other sources such as climate normal data from the nearest Environment Canada weather station were used. In this case, the name of the station accompanies the temperature value. Since much of the original data were acquired prior to the mid 1980s, climate normals from 1951-1980 are generally reported (AES, 1982a). The 1961-1990 normals (AES, 1997) are cited for later database entries. Maximum and minimum monthly mean temperature (and associated months) were included where possible.

Average Annual Snowfall (cm), Month of Maximum Snowfall

This value indicates the average annual snowfall (cm) as recorded in the region for the same period as the mean annual air temperature or climate normal. The month of maximum snowfall, when available, has also been included. Snow provides an insulating layer that buffers the ground from variations in air temperature.

Maximum Thickness of Snow Cover (cm) and Duration of Snow Cover

The snow cover thickness is the amount of snow (cm) measured on the ground. The maximum winter snow cover depth has been included in the database to give an indication of the importance of snow cover in determining ground temperature at a particular location. The period during which the ground is covered with snow is given in the field labelled 'duration of snow cover'.

Snow cover data were extracted from the climate normals database (AES, 1997) for many of the AES sites included in the database. This information however was only reported for a limited number of other sites. Further information on snow cover in Canada can be found in MSC (2000) and Brown and Braaten (1998).

Depth, Mean Annual Ground Temperature (°C) etc.

The database contains several sets of columns which include: depth (metres); mean annual ground temperature (MAGT, °C), and in the case of shallow boreholes maximum and minimum annual temperature and month for each depth if available. At sites with numerous depth records only select depths and associated temperature measurements have been included. Average values for the period of measurement are given. For sites at which data have been collected for a one year period the maximum and minimum temperature recorded during the year are given. If the period of measurement is greater than one year, the mean annual ground temperature given is the average of the mean values calculated for each year. The maximum and minimum temperatures reported are the average of the values determined for each year during the period of observation.

For deep borehole measurements, the mean annual ground surface temperature has been estimated and two values may be given. The first value was determined by extrapolating the gradient of temperature measurements in the upper 100 m to obtain the surface intercept. The second value was calculated from a best-fit line to temperatures measured in the upper 200 m. The surface temperature calculated using the data from the upper 100 m will be representative of more recent surface climate conditions compared to that calculated using the deeper data. If a value is shown with "<=", the borehole was logged only once and therefore temperatures may not have returned to equilibrium. The calculated equilibrium temperatures at selected depths are presented in the database for sites where sufficient information for the calculation is available. Data from the most recent temperature log are given in the database for sites lacking the information required to calculate the equilibrium temperatures.

The method of measurement used to obtain ground temperatures and the associated accuracy and precision of the instrumentation is not provided in the database. The original source of data may be consulted to obtain this information.

Vegetation Type and Earth Materials

Information on vegetation type if given by the original source is reported in the database. The vegetation cover can act to buffer the ground thermal regime from changes in air temperature. Information on surficial material is also reported in the database where available. This information may be used to give an indication of the soil thermal properties.

Active Layer Thickness (cm)

At permafrost sites, the depth of seasonal thawing was in some cases given by the original source. When this value was not given, it was sometimes possible to calculate the active layer thickness from the shallow ground temperature data.

Permafrost Region

Sites were classified as being located in the continuous permafrost zone (cont.), discontinuous permafrost zone (disc.), alpine or mountain permafrost zone (alpine) or outside the permafrost region (no pf). The map of Heginbottom et al. (1995) was used to determine the permafrost zone.

Comments

Additional information about the site or data set is presented in this field. In the case of the deep borehole temperatures for example, this may include information on drilling duration or whether the equilibrium temperature has been calculated.

Source

The reference source(s) for each location are identified by number in the database. A complete reference list can be found in the Appendix.

Spreadsheet Workbook

The database is contained on the accompanying diskette. The spreadsheet workbook (Ground Temperature Database2.xls) consists of four pages:

Page 1 (ExDeep) - Contains sites where mean annual ground surface temperature has been extrapolated from deep temperature data. Many of the boreholes in this section are greater than 125 m deep and are hydrocarbon exploration wells. Others may be less than 125 m deep but only have temperature measurements below the level of zero annual amplitude.

Page 2 (shgt) - Contains sites where shallow ground temperature data is available at several depths. Boreholes are generally less than 25 m deep and temperature measurements are available above the level of zero annual amplitude.

Page 3 (shgt1) - Contains sites where shallow ground temperature data is only available at one depth.

Page 4 (shortgt1) - Contains a condensed version of the database which is presented as Table 1.

The entire database can also be found in PDF format (exdeep.pdf, shgt.pdf and shgt1.pdf) on the accompanying diskette.

SOURCES OF INFORMATION

The majority of ground temperature information was compiled using a combination of data from Environment Canada soil temperature stations and the Geological Survey of Canada (including the data from the former Earth Physics Branch) of the Department of Natural Resources (formerly Energy Mines and Resources) data from short temperature cables, and intercept temperatures from deep well log information. A number of other sources, such as the work of the late Roger Brown, were found in scientific journals and reports. Emphasis was placed on sites north of approximately 50°N latitude. The location of ground temperature measurement sites is shown in Figure 2. The major data sources are discussed briefly below.

The Canadian Geothermal Data Collection

The Canadian Geothermal Data Collection is published in Taylor and Judge (1974, 1975, 1976, 1977) and Taylor et al.(1979, 1981 and 1982). This collection contains all available non-confidential subsurface temperature data collected by the former Earth Physics Branch (now the Geological Survey of Canada) prior to 1982 from boreholes of depths greater than 125 m within the Canadian permafrost regions. Geothermal studies in preserved industrial exploratory wells in the Arctic Archipelago, Yukon, Mackenzie valley and Mackenzie Delta region are a major source for the data in this collection. The acquisition and accuracy of the data are discussed in Taylor and Judge (1974).

The drilling process disturbs the thermal equilibrium. The time required for stabilization of temperatures ranges from several months to several years to decades depending on drilling fluid temperature, duration of drilling, soil water content and the amount of heat released during freeze-back. Equilibrium temperatures have been calculated for boreholes at which several temperature measurements were made over time after the completion of drilling and after freeze-back using the technique described in Taylor and Judge (1974).

Little data were available in the upper 25 to 50 m at these deep sites, therefore it is necessary to use an extrapolation from the temperature profile at greater depth to get an estimate of the ground surface temperature. A mean annual ground surface temperature intercept value was extrapolated from the published temperature-depth graphs. Two values are reported in the database when the extrapolated ground surface temperature using the data in the upper 100 m is very different from that determined using the data in the upper 200 m. The difference in the two values may give some indication of past changes in climate.

All temperature logs for these published sites are also available digitally in the Global Geocryological Database published by the International Permafrost Association (1998b). Additional data collected by the Geological Survey in deep wells after 1982 are also included.

Yukon Ground Temperature Data Collection - 1966 to August 1981

The Yukon Ground Temperature Data Collection (Burgess et al., 1982a) presents

subsurface temperature measurements recorded from 1966 to August 1981 in the Yukon Territory. The collection includes information obtained from holes shallower than 125 m. These measurements were obtained in cooperation with the mining, petroleum, engineering and consulting industries, and the Department of Indian and Northern Affairs.

Norman Wells Pipeline Monitoring Program

Ground temperature measurements along the Norman Wells Oil Pipeline began in 1984 as part of the Permafrost and Terrain Research and Monitoring Program (see MacInnes et al., 1989, 1990). This program was established to monitor permafrost and terrain stability in the Mackenzie valley along the right-of way of the buried oil pipeline which traverses the discontinuous permafrost zone between Norman Wells, N.W.T. and Zama, Alberta. The distribution of permafrost varies from widespread to scattered. Ground temperature data are collected at over 25 monitoring sites located in a variety of terrain types from organic terrain with thick peat covers to fine and coarse grained mineral soils. Multi-sensor temperature cables generally 20 m in length were installed off the pipeline right-of-way at each site. Thermistors are spaced 0.5 to 1 m apart near the ground surface and 2 or 3 m apart at depth. Data collected during the first year of operation from sites off the pipeline right-of-way (Burgess, 1987) have been included in the database. Other information such as snow cover thickness, active layer thickness and lithology is reported for these sites in Pilon et al. (1989) and Burgess, (1993) . Analyses of ground temperatures and terrain stability at these sites have been reported in Burgess and Riseborough (1990), Burgess and Lawrence (1997), Nixon and Burgess (1999) and Burgess and Smith (in press).

Environment Canada Soil Temperature Sites

Soil temperature sites are found adjacent to selected climatological observation sites of Environment Canada's Meteorological Service of Canada (former Atmospheric Environment Service). Data from these sites are published in Canadian Climate Normals (AES 1984). These sites are usually situated on level ground, well exposed to wind and sun and free from unusual drifting of snow. The surface is grass which is maintained at a constant length in summer. These sites therefore are considered as 'artificial' and not truly representative of the surrounding area. Snow is allowed to accumulate throughout the winter. Thermistors are used to measure soil temperature and are placed at depths of 1, 10, 20, 50, 100 and 150 cm. Temperature and snow depth measurements are normally taken at 8:30 AM and 4:00 PM local standard times. Data for 50 of these sites are included in the database. One third of these sites are currently operating and of these, only three are located within the permafrost region, Fort Smith, N.W.T., Thompson, Manitoba and Goose A, Newfoundland. Air temperature and snowfall (AES 1982a and 1982b) data from these stations has also been incorporated into the database. In addition to these shallow soil temperature sites, Environment Canada initiated in the mid 1980s, ground temperature monitoring in seven deeper boreholes co-located with automated climate stations in collaboration

with other researchers. Four of these sites are still active.

Circumpolar Active Layer Monitoring (CALM) Program Sites

Several sites have been established in northern Canada as part of the International Permafrost Association's active CALM network. These sites were established for long-term monitoring of the characteristics of the active layer. At some CALM sites shallow temperature data are also collected and summary temperature data for the period 1988 to 1997 is included in the database. Information from the initiation of the network to 1997 has been published in the Global Geocryological Database (International Permafrost Association, 1998b). Thaw depths are submitted annually and summarized on the CALM web site (http://www.geography.uc.edu/~kenhinke/CALM/index.html).

Other Sources

The work of R.J.E. Brown is a major contribution to the ground temperature database. Much of these data are the result of a program of field surveys, initiated by the Division of Building Research, National Research Council of Canada, in Alberta, Mackenzie River District, Saskatchewan, Manitoba, British Columbia, Yukon Territory, Quebec and Labrador (eg. Brown, 1973 and 1978). Engineering problems encountered during development in the southern fringe of the permafrost zone provided the stimulus for this program. Brown (1967) produced a permafrost distribution map which includes permafrost thickness and ground surface temperature information. Some stations however, had incomplete ground temperature records, records of short duration or data of questionable reliability due to observer or instrument error.

Judge (1973) conducted a study on the thermal regime of the Mackenzie valley to provide information for the assessment of pipeline proposals. The report includes geothermal measurements for over 50 locations.

Burgess et al. (1982b) present temperature data for Illisarvik Lake on Richards Island. This lake was artificially drained to investigate permafrost growth under naturally occurring field conditions. Twenty four boreholes were drilled to depths ranging from 15 to 92 m below lake level and were instrumented with thermistor cables. The predrainage mean annual ground temperatures are reported in the database.

Data have also been collected by the GSC at several other sites especially in the Mackenzie valley and Mackenzie Delta regions of N.W.T. Some of these are active CALM sites (Nixon, in press) while others are deeper boreholes that were part of regional studies such as the Mackenzie Delta transect (Dallimore, 1992).

Between 1992 and 1994, temperature data were collected by Majorowicz (1992, 1993 and 1994) from several hydrological wells located mainly in northern Alberta. Permafrost is not present at any of the sites but some of the sites are located in the discontinuous permafrost zone. Majorowicz calculated ground surface temperatures for the period 1992 to 1994 from the well temperatures and these have been included in the database.

J.R. Mackay has published numerous papers on terrain conditions in the Mackenzie Delta area and these provide a source of ground temperature data (eg. Mackay and MacKay 1972). Temperature data from boreholes drilled by Hydro-Quebec at potential dam sites have provided information on permafrost distribution in the Great Whale River Basin (Poitevin and Gray, 1982). Researchers at Laval University have conducted permafrost studies in Northern Quebec and have been monitoring ground temperatures for several years (eg; Seguin et al. 1989; Allard et al. 1995). Numerous other scientific and engineering studies, and other geotechnical reports of site investigations for northern development projects have also provided data.

DISCUSSION AND SUMMARY DATA

A summary table (Table 1) has been produced which provides information on mean annual near-surface ground temperature, borehole depth and status of measurement site for all 656 sites in the database. The table is divided into 3 sections, corresponding to each page in the database file. For deep boreholes, the ground surface temperature (i.e. depth = 0) estimated by extrapolation of the temperature profile at depth below the level of zero annual amplitude is given in the field labelled MAGT. For shallow boreholes, the temperature (MAGT) given was determined directly from observations in the upper few metres of the ground. The depth of the value in this case varies from site to site according to the sensor depth.

The spatial distribution of ground temperature measurement sites is not uniform (Fig. 2). There are more sites located in western Canada (Figs. 2 and 3) with a concentration of sites in the Mackenzie Delta and Mackenzie valley regions. The majority of sites are located between 55 and 70°N (Figs. 2 and 4). More information is available for boreholes of depths greater than 25 m than shallower holes (Fig. 2 and Table 2). The data set includes sites throughout the continuous and discontinuous permafrost zone but only four boreholes are in alpine permafrost (Fig. 2 and Table 3). About 112 sites are considered to be active (Table 4) and most of these are located in the Mackenzie valley/Delta region and northern Quebec (Fig. 5).

Table 2. Distribution of sites according to borehole depth.

Borehole Depth	**Number of Sites**
Surface (SU) < 10 m	162
Shallow (S) 10 - 25 m	126
Intermediate (I) 25 - 125 m	185
Deep (D) > 125 m	183

Table 3. Distribution of sites by permafrost zone.

Zone	**Number of sites**
Continuous Permafrost Zone	281
Discontinuous Permafrost	241
Alpine Permafrost	4
Non Permafrost Region	130

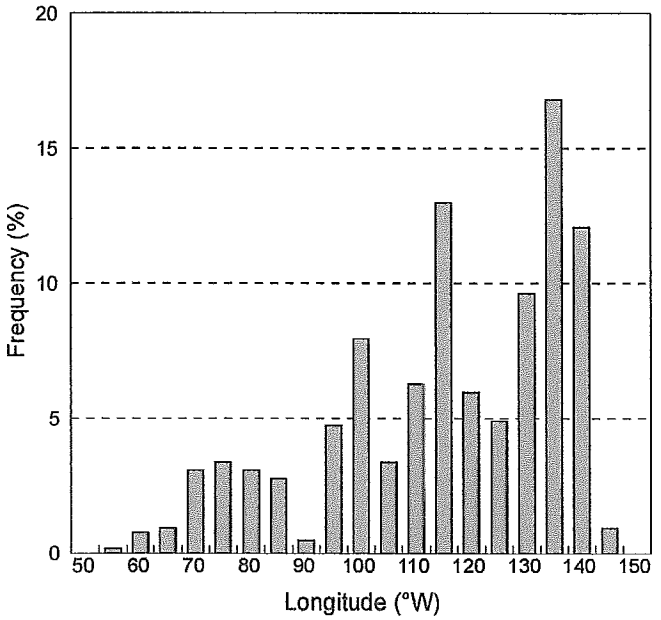

Figure 3. Longitudinal distribution of measurement sites.

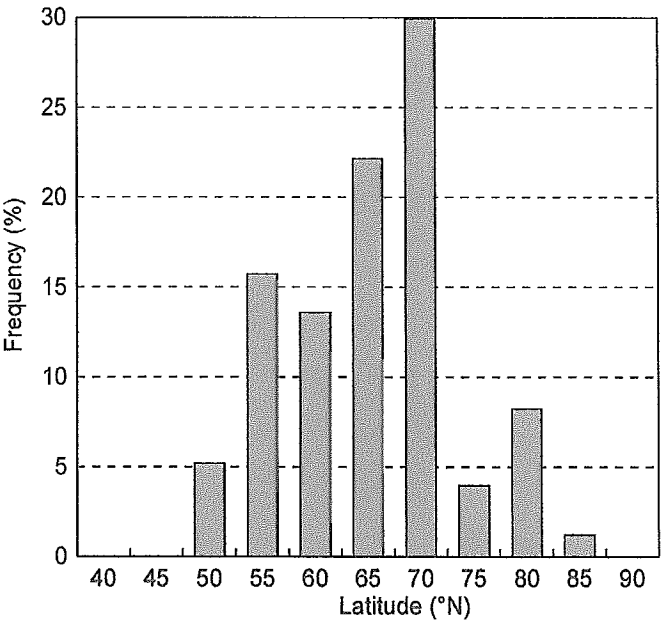

Figure 4. Latitudinal distribution of measurement sites.

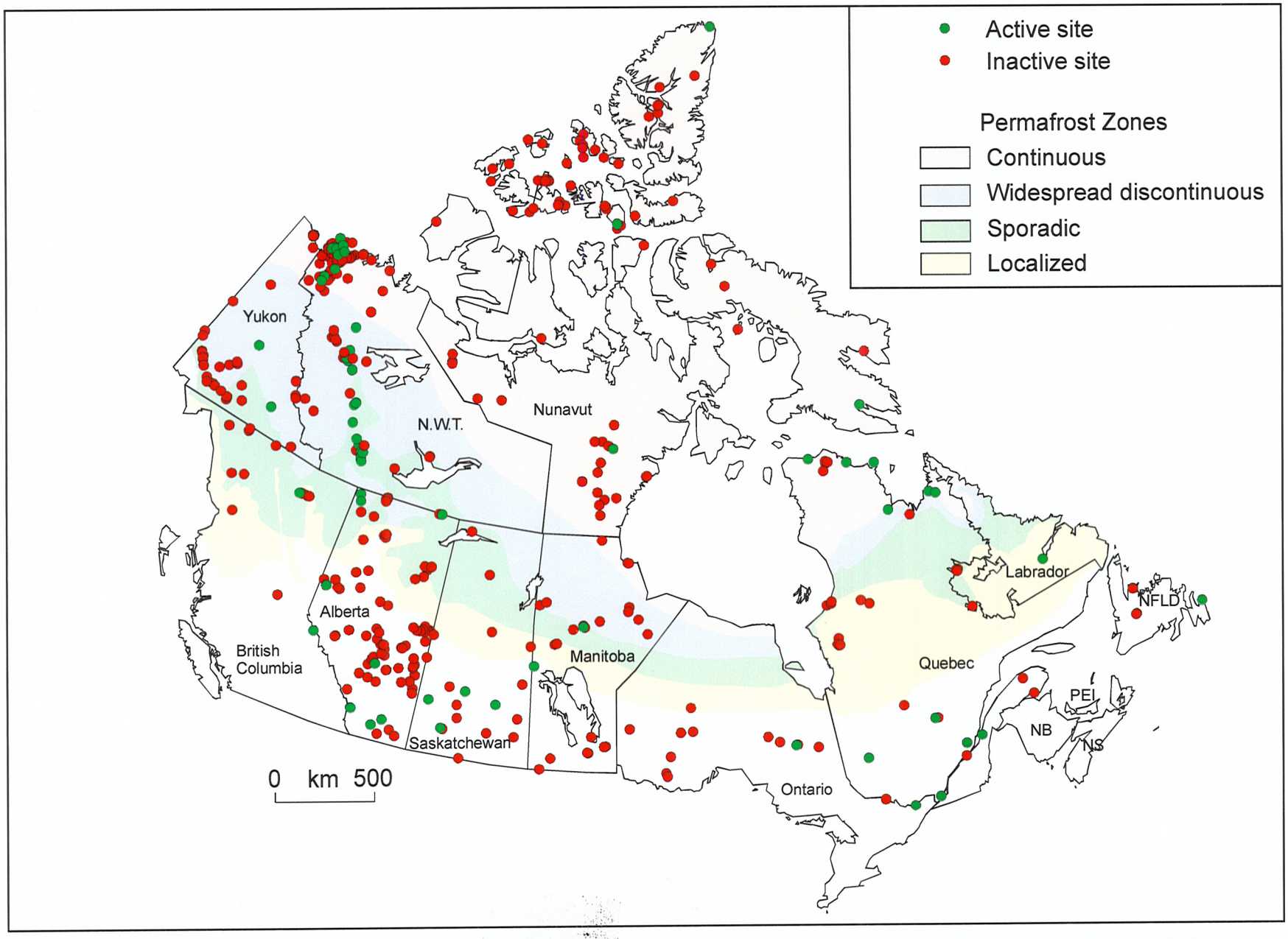

Figure 5. Location of active and abandoned (inactive) measurement sites. Permafrost zones are extreacted from the map of Kettles et al. (1997).

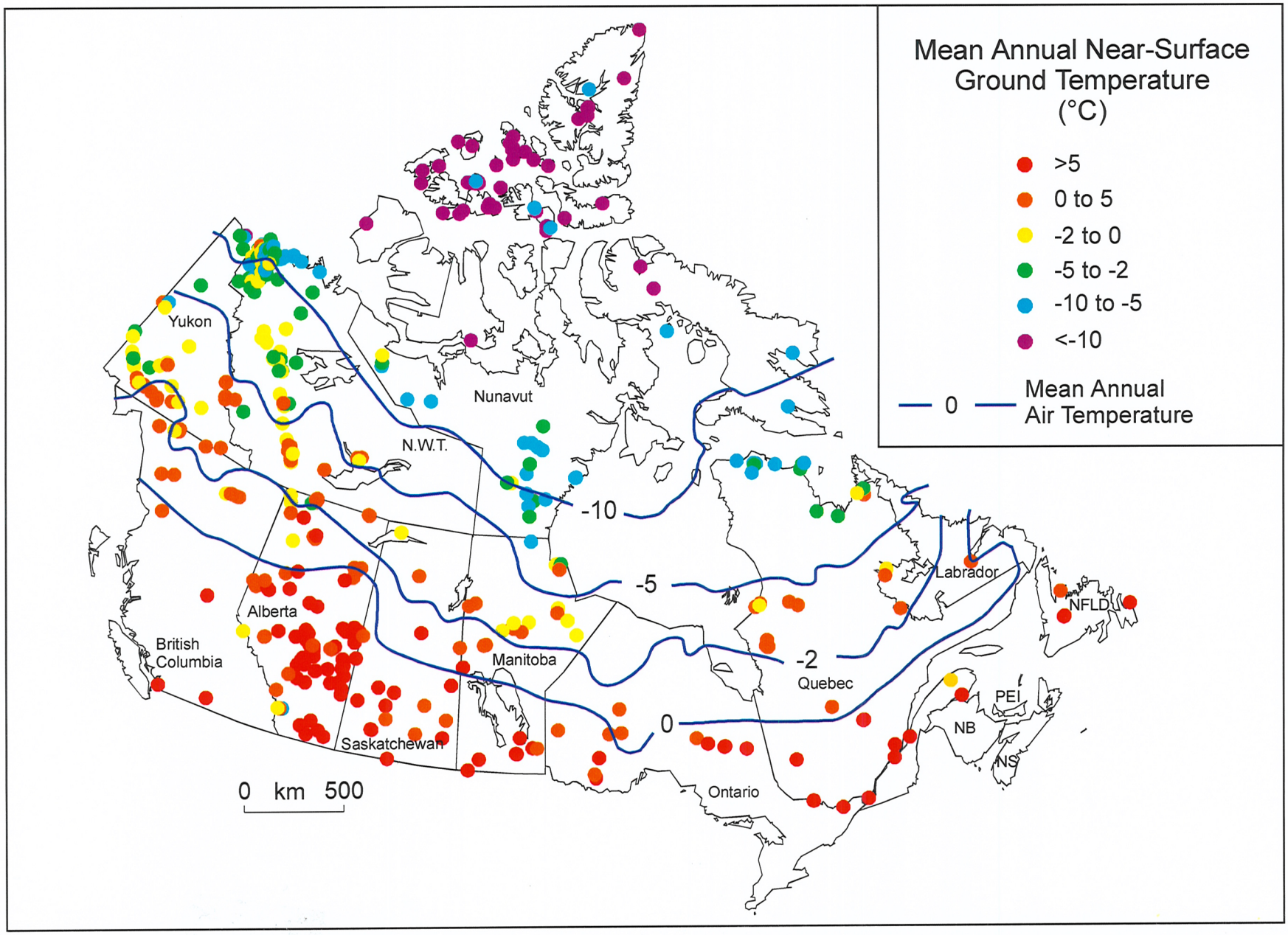

Figure 6. Mean annual near-surface gorund temperature for northern Canada. Mean annual air temperature isotherms are derived from Environment Canada 1951-80 climate normals (AES, 1982).

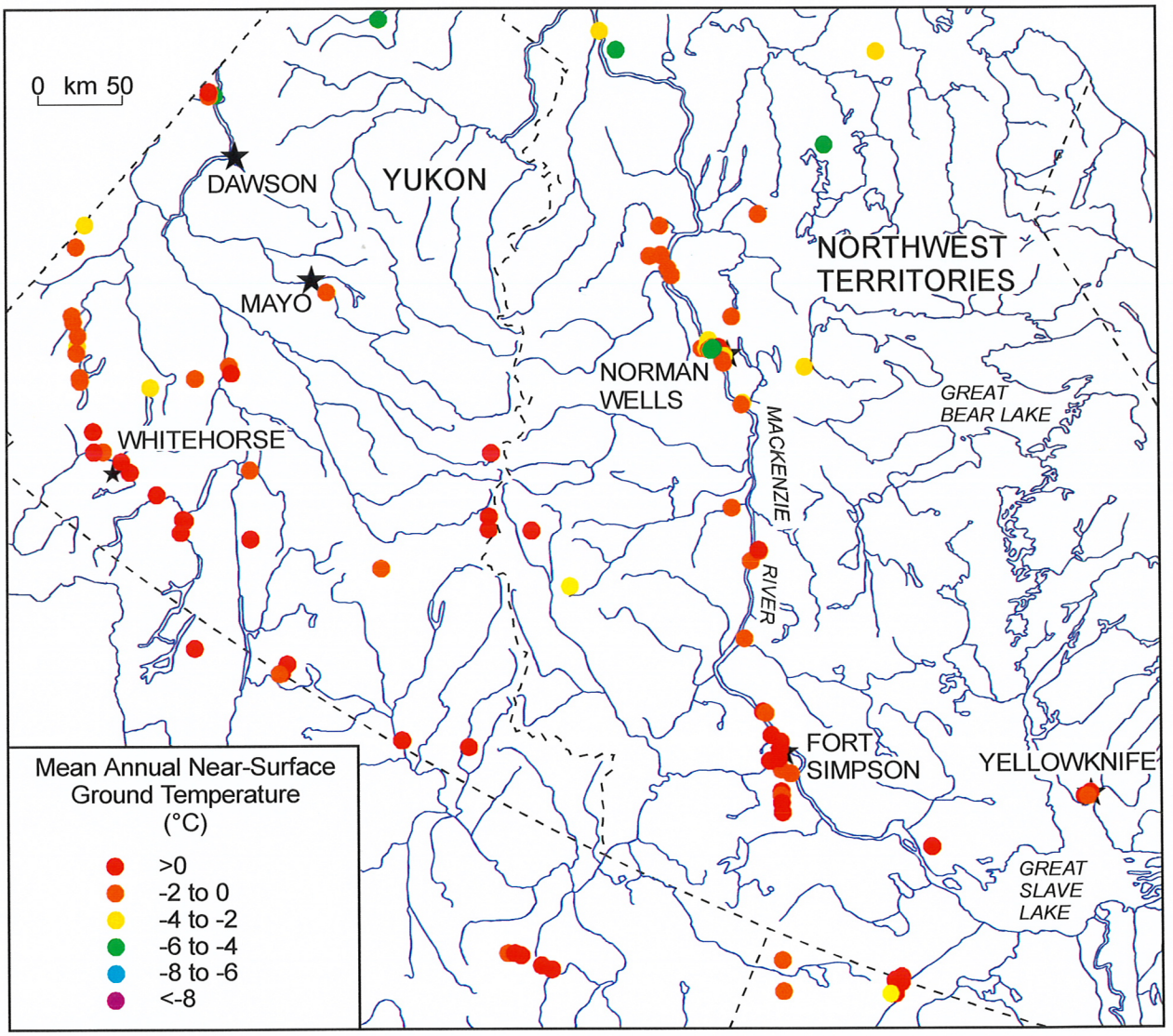

Figure 7. Mean annual near-surface ground temperature for sites in the Yukon and Mackenzie valley region.

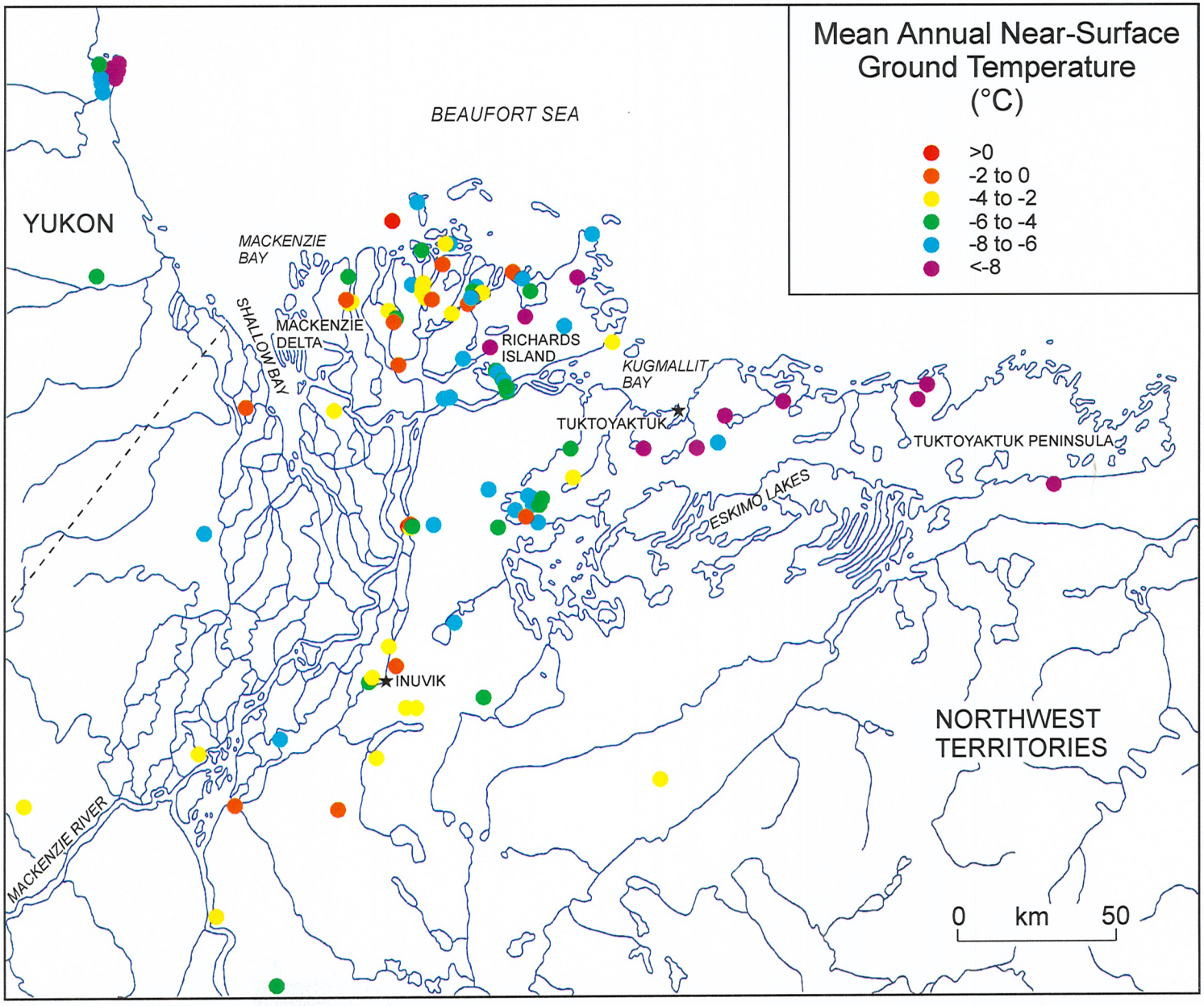

Figure 8. Mean annual near-surface ground temperature for sites in the Mackenzie Delta and Yukon coastal region.

Table 4. Distribution of sites according to monitoring status.

Status	Number of sites
Active (A)	112
Inactive (I)	544

The near-surface MAGT data presented in Table 1 were used to produce a ground temperature map (Fig. 6) for northern Canada. This map combines data obtained at different times with the majority of data collected in the 1970s and 1980s. Larger scale maps have also been produced to show the spatial variation in ground temperature for the Mackenzie valley, Mackenzie Delta and the islands of the Arctic Archipelago (Figs. 7, 8 and 9). Figure 10 shows a general decrease in ground temperature with increasing latitude but there is a considerable scatter in this relationship. Ground temperatures are generally lower near Hudson Bay at a given latitude than at sites further to the east or west (Fig. 6). Ground temperatures tend to be higher on the modern Mackenzie Delta than the adjacent tundra uplands. Ground temperatures at a similar latitude on Richards Island are about 4°C lower than those on the modern delta (Fig. 8). Vegetation which leads to deeper snow cover and the large amount of water cover maintained by lakes and river channels contribute towards maintaining higher ground temperatures in the Mackenzie Delta (Burgess and Smith, in press).

The general spatial pattern of air temperature is similar to that of ground temperature (Fig. 6). Although a strong relationship (Fig. 11) exists between mean annual air and ground temperature, mean annual ground temperature may be up to 4°C higher than the air temperature. The difference between air and ground temperature will be dependent on factors such as snow cover, vegetation and surficial materials.

The database presented in this report provides information that is required for planning northern development and infrastructure design. It also provides baseline data relevant to climate change studies such as monitoring the climate change signal in permafrost and climate change impact assessment. These data may also be used for the development and validation of climate change models and permafrost models.

The database was structured to record baseline conditions. Most sites included in the database are inactive and the database was not envisaged as a means to keep an ongoing record of changes in ground temperature over time. However, with increased focus on climate change, the need for long-term active monitoring of the permafrost thermal regime has been recognized. A global network of permafrost observations, the Global Terrestrial Network for Permafrost (GTN-P) has recently been established under the World Meteorological Organization (WMO) and the Global Climate Observation System (GCOS) (Burgess et al., 2000). Once fully implemented, data from a network of sites around the globe will be submitted annually and posted on the GTN-P web site (http://sts.gsc.nrcan.gc.ca/gtnp/).

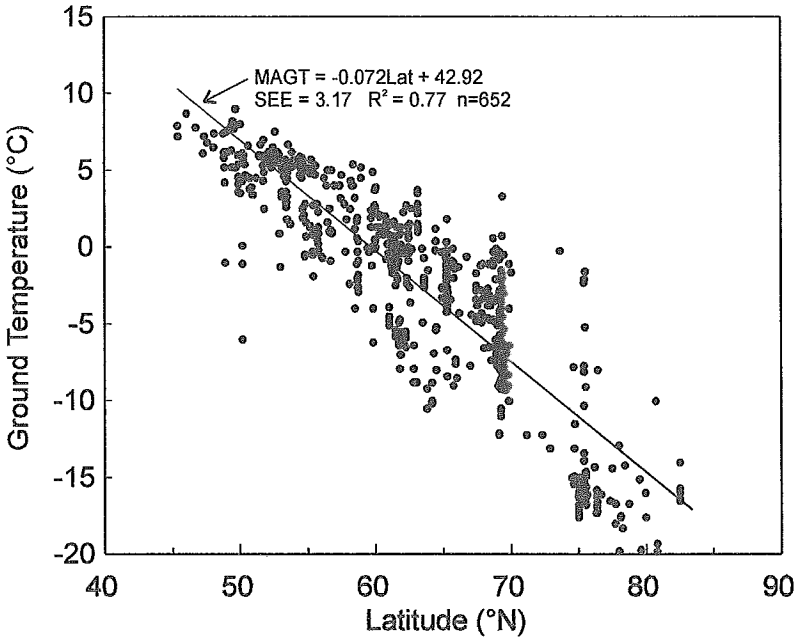

Figure 10. The relationship between latitude and mean annual near-surface ground temperature (MAGT). Note: SEE refers to the standard error of the estimate and R^2 refers to the goodness of fit of the regression equation.

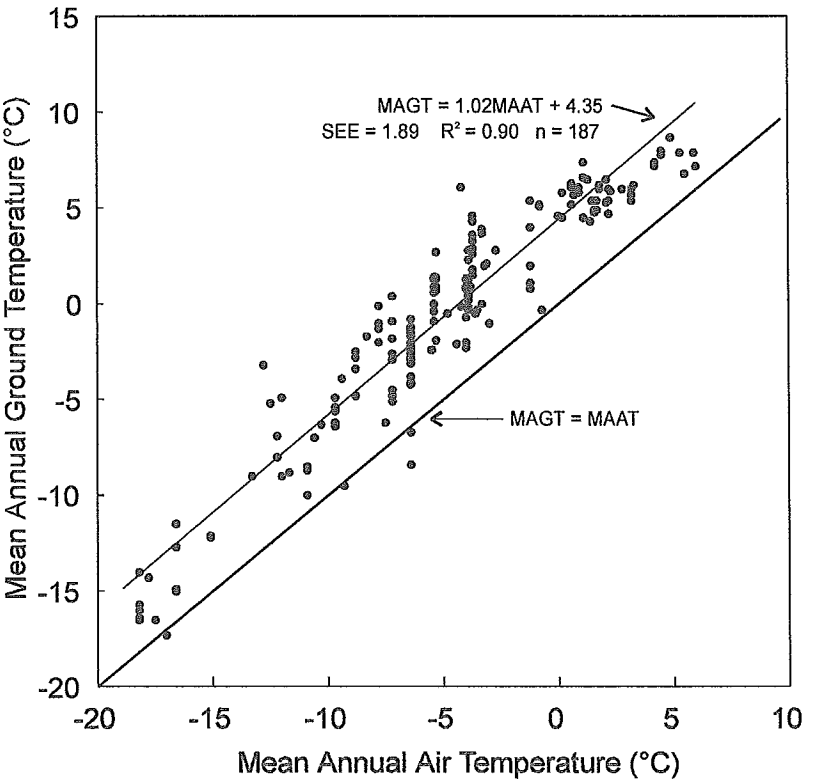

Figure 11. The relationship between mean annual air temperature (MAAT) and mean annual near-surface ground temperature (MAGT).

The authors recognize that the ground temperature database is not exhaustive, and welcome submission of data that have been inadvertently omitted or recently acquired.

ACKNOWLEDGEMENTS

The ground temperature database was originated by S. Young and A.S. Judge (retired from GSC). We would like to acknowledge our colleagues at the GSC and other agencies for their contribution to the ground temperature database. Stephen Robinson critically reviewed the manuscript and provided helpful suggestions.

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Table 1

Summary table extracted from the ground temperature database.

Legend for borehole depth class:
Surface (SU), < 10 m
Shallow (S), 10-25 m
Intermediate (I), 25-125 m
Deep (D), > 125 m

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
EXTRAPOLATED MEAN ANNUAL GROUND SURFACE TEMPERATURE								
Arctic Islands								
Eastern Melville Is		76.33	109.50	-17.3	0.00	D	I	54
Neil 0-15	# 197	80.74	83.08	-10.0	0.00	D	I	62,9
Gemini E-10	# 175	79.99	84.07	-17.6	0.00	D	I	62,9
Fosheim N-27	# 97	79.62	84.72	-19.7	0.00	D	I	57,9
Mokka A-02	# 166	79.52	87.02	-15.1	0.00	D	I	62,9
Louise Bay 0-25	# 169	78.75	102.70	</=-16.7	0.00	D	I	60,9
Dome Bay P-36	# 171	78.43	103.26	</=-14.2	0.00	D	I	58,9
Kristoffer Bay B-06	# 155	78.26	102.53	-18.3	0.00	D	I	62,9
Thor P-38	# 170	78.13	102.53	-17.6	0.00	D	I	62,9
Hoodoo Dome H-37	# 86	78.11	99.76	</=-17.5	0.00	D	I	60,9
Brock I-20	# 158	78.00	114.57	</=-19.8	0.00	D	I	60,9
Wilkins E-60	# 87	77.99	111.36	</=-12.9	0.00	D	I	57,9
Linckens Island P-46	# 195	77.76	97.76	</=-16.7	0.00	D	I	61,9
Sutherland 0-23	# 256	77.72	102.14	-18.0	0.00	D	I	62,9
Cornwall 0-30	# 291	77.50	94.65	</=-14.4	0.00	D	I	62,9
Pat Bay A-72	# 258	77.35	105.45	-16.5	0.00	D	I	62,9
Jameson Bay C-31	# 91	76.67	116.73	</=-16.1	0.00	D	I	58,9
Drake E-78	# 199	76.46	108.49	-16.0	0.00	D	I	63,9
Drake D-68	# 198	76.45	108.93	</=-8	0.00	D	I	58,9
Drake B-44	# 172	76.39	108.27	-16.6	0.00	D	I	63,9
Drake D-73	# 259	76.37	108.49	-17.2	0.00	D	I	63,9
Bent Horn N-72	# 196	76.36	103.94	-16.9	0.00	D	I	62,9
Bent Horn F-72A	# 286	76.36	103.97	-15.8	0.00	D	I	63,9
Hecla I-69	# 200	76.31	110.39	</=-17.3	0.00	D	I	62,9
Peddler Point D-49	# 257	75.64	118.81	</=-16.1	0.00	D	I	60,9
Little Cornwallis PG-10-77	#214	75.49	97.02	</=-5.19	0.00	D	I	37a
Polaris -1	# 157	75.40	96.93	-15.3	0.00	D	I	63,9
Polaris -2	# 157	75.40	96.93	-10.3	0.00	D	I	63,9
Polaris -3	# 157	75.40	96.93	-13.9	0.00	D	I	63,9
Polaris -4	# 157	75.40	96.93	-15.8	0.00	D	I	63,9
Polaris -5	# 157	75.40	96.93	-16.4	0.00	D	I	63,9
Polaris -6 (offshore)	# 157	75.50	97.03	</=-1.6	0.00	D	I	37a
Polaris - 7 (offshore)	#157	75.45	97.00	</=-2.1	0.00	D	I	37a
Polaris -8	#157	75.40	96.93	na	0.00	D	I	37a
Polaris -9 (offshore)	#157	75.40	96.93	</=-2.3	0.00	I	I	37a
Polaris - 10	#157	75.40	96.93	</=-8.1	0.00	D	I	37a

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Polaris - 11	#157	75.40	96.93	</=-7.7	0.00	I	I	37a
Devon E-45	# 99	75.07	91.81	-15.0	0.00	I	I	62,9
Winter Harbour	# 73	74.80	110.51	</=-15.4	0.00	D	I	57,9
Resolute 1	-	74.68	94.90	</=-14.9	0.00	D	I	57,9
Lobitos Resolute L-41	# 55	74.68	94.74	</=-15	0.00	D	I	57,9
Dundas C-80	# 168	74.65	113.38	-15.4	0.00	D	I	62,9
Garnier O-21	# 92	73.68	90.61	<-.25	0.00	D	I	57,9
Storkerson Bay A-15	# 98	72.90	124.56	</=-13.1	0.00	D	I	57,9
Rowley M-04	# 95	69.07	79.06	-9.0	0.00	D	I	62,9
Resolute Bay		74.50	95.00	-15.0	0.00	D	I	37
Polar Gas PG-9A-77	#214	75.53	97.23	</= -9.1	0.00	D	I	37a
Assistance Bay PG-7-77	#214	74.64	94.36	</= -7.8	0.00	I	I	37a
Agassiz Ice Cap 1977 hole	#606-1	80.82	72.90	</= -19.3	0.00	D	I	37a
Agassiz Ice Cap 1984 hole	#606-2	80.82	72.90	</= -19.8	0.00	D	I	37a
Marryatt K-71	#299	76.35	108.97	</= -16.2	0.00	D	I	37a
Polar Gas	PG-7-76	75.40	104.49	-13.4	0.00	I	I	37a
Polar Gas	PG-11-76	75.54	105.60	-14.7	0.00	I	I	37a
Rea Pt.	Telsat 1	75.37	105.67	-14.96	0.00	I	I	37a
Rea Pt.	Telsat 2	75.37	105.67	-14.95	0.00	I	I	37a
Mackenzie Delta Region								
Kimik D-29	# 261	69.64	132.37	</=-9.3	0.00	D	I	60,9
Ivik J-26	# 266	69.60	134.34	</=-8.9	0.00	D	I	60,9
Atertak F-41	# 262	69.51	132.70	</=-8.4	0.00	D	I	60,9
Kilagmiotak F-48	# 165	69.46	134.20	-7.7	0.00	D	I	63,9
Pikiolik M-26	# 263	69.43	132.62	</=-8	0.00	D	I	59,9
Mallik A-06	# 265	69.42	134.51	</=-8.3	0.00	I	I	59,9
Adgo P-25	# 255	69.42	135.84	</=3.3	0.00	D	I	59,9
Taglu D-55	# 269	69.40	134.97	-6.2	0.00	D	I	62,9
Garry P-04	# 288	69.40	135.51	</=-4.5	0.00	D	I	61,9
Taglu H-54	# 287	69.39	134.97	</=-5.6	0.00	D	I	62,9
Pikiolik E-54	# 264	69.39	132.74	</=-9.1	0.00	D	I	60,9
Taglu N-43	# 282	69.38	134.94	-5.6	0.00	D	I	62,9
Taglu D-43	# 268	69.37	134.95	-1.7	0.00	D	I	62,9
Taglu C-42	# 267	69.35	134.94	-1.9	0.00	D	I	62,9
Niglintgak H-30	# 173	69.32	135.34	-3.6	0.00	D	I	63,9
Niglintgak M-19	# 270	69.31	135.32	</=-3.4	0.00	D	I	59,9
Niglintgak B-19	# 278	69.30	135.31	</=-4	0.00	D	I	61,9
Kumak E-58	# 280	69.29	135.25	-4.0	0.00	D	I	63,9
Ya Ya A-28	# 254	69.29	134.59	-8.8	0.00	D	I	63,9

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Ya Ya P-53	# 176	69.21	134.71	-8.0	0.00	D	I	63,9
North Ellice J-23	# 271	69.21	135.85	</=-4.7	0.00	D	I	61,9
Unipkat I-22	# 167	69.20	135.34	-4.1	0.00	D	I	63,9
Red Fox P-21	# 260	69.18	133.58	</=-5.7	0.00	D	I	60,9
Reindeer D-27	# 63	69.10	134.62	</=-6.3	0.00	D	I	61,9
Titalik K-26	# 177	69.09	135.11	</=-0.7	0.00	D	I	57,9
Reindeer F-36	# 179	69.09	134.65	</=-7	0.00	D	I	61,9
Siku A-12	# 277	69.02	133.54	-5.1	0.00	D	I	62,9
Siku E-21	# 284	69.00	133.62	-7.7	0.00	D	I	63,9
Siku C-11	# 274	69.00	133.65	-6.1	0.00	D	I	62,9
Parsons N-10	# 178	69.00	133.53	</=-6	0.00	D	I	61,9
Parsons D-20	# 285	68.99	133.57	-7.5	0.00	D	I	63,9
Kamik D-48	# 273	68.95	133.46	-7.5	0.00	D	I	63,9
Atigi O-48	# 194	68.95	133.94	-6.9	0.00	D	I	63,9
Parsons N-17	# 275	68.95	133.57	-0.1	0.00	D	I	62,9
Parsons L-37	# 279	68.95	133.67	-7.1	0.00	D	I	62,9
Kugpik O-13	# 192	68.88	135.30	-2.1	0.00	D	I	63,9
Parsons L-43	# 272	68.88	133.70	-6.0	0.00	D	I	62,9
Ikhil I-37	# 193	68.78	134.13	-6.5	0.00	D	I	63,9
Ulu A-35	# 276	68.73	135.88	</=-0.9	0.00	D	I	61,9
Beaver House H-13	# 89	68.37	135.55	</=-6.5	0.00	D	I	58,44,9
Tuktoyaktuk	Atkinson Point	69.90	131.45	-10.0	0.00	I	I	44,9
Tuktoyaktuk	Liverpool	69.85	131.45	-10.0	0.00	I	I	44,9
Tuktoyaktuk	Liverpool	69.85	130.12	-8.5 to -9.0	0.00	I	I	44,9
South Mackenzie Delta	#1	67.85	134.58	-3.4	0.00	S	I	44,9
South Mackenzie Delta	#2	67.85	134.58	-4.5	0.00	S	I	44,9
South Mackenzie Delta	#3	67.85	134.58	-4.5	0.00	S	I	44,9
South Mackenzie Delta	#4	67.85	134.58	-2.8	0.00	I	I	44,9
South Mackenzie Delta	#5	67.85	134.58	-4.9	0.00	S	I	44,9
South Mackenzie Delta	#6	67.85	134.58	-4.3	0.00	S	I	44,9
Illisarvik Lake	250m inland	69.48	134.59	-7.0	0.00	I	I	45,9
Illisarvik Lake	shoreline	69.48	134.59	-3.0	0.00	I	I	45,9
Inuvik	no. 3	68.30	133.83	-4.6	0.00	I	I	39,67,41,14
Inuvik	no. 4	68.30	133.83	-4.6	0.00	I	I	39,67,41,14
SW of Tuktoyaktuk	Near lake	69.30	133.10	-8.5	0.00	I	I	37
Ellice Is. #1	30 m from channel	69.15	135.72	-0.4	0.00	I	I	37
Ellice Is. #2	20 m from channel	69.15	135.75	-0.8	0.00	I	I	37
Ellice Is. #3	9 m from channel	69.20	135.43	-2.8	0.00	I	I	37
Ellice Is. #4		69.15	135.72	-3.2	0.00	I	I	37
Ellice Is. #5	3 m from channel	69.15	135.72	-2.9	0.00	I	I	37

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Amauligak (offshore)	#601	70.06	133.63	</=-1.64	0.00	D	I	37a
Isserk Geotechnical Hole (offshore)	#602	69.91	134.30	</= -1.1	0.00	I	I	37a
Taglu	92GSCTaglu	69.37	134.95	-6.7	0.00	D	I	22a
Kumak	92GSCKumak	69.19	135.34	-4.3	0.00	D	I	22a
Unipkat	92GSCUnipkat	69.19	135.34	-0.3	0.00	I	I	22a
Tuktoyaktuk	208-7	68.45	133.03	-4.7	0.00	S	I	37a
Other NWT/Nunavut								
Arctic Red River		67.43	133.10	-4.5	0.00	I	I	48
Fort McPherson site	-	67.43	135.42	-2.8	0.00	I	I	48,44
Horton River G-02	# 77	69.86	127.27	</=-8.3	0.00	D	I	61
Sadene D-02	# 281	68.85	126.79	-3.5	0.00	D	I	62
Kugaluk N-02	# 76	68.53	131.52	</=-3.8	0.00	D	I	57,9
Tedji Lake K-24	# 253	67.73	126.83	-4.8	0.00	D	I	62,9
Muskox North		67.09	115.28	</=-4.4	0.00	D	I	57,9
Muskox South		67.01	115.22	</=-7.7	0.00	D	I	57,9
Hackett River 190-1	# 190	65.92	108.47	</=-7.6	0.00	D	I	58,9
Hackett River 190-2	# 190	65.92	108.47	</=-7.3	0.00	D	I	58,9
Hume River D-53	# 100	65.87	129.18	</=-1.4	0.00	D	I	57,44,9
West Whitefish H-34	# 151	65.56	124.60	</= -3.4	0.00	D	I	58,44,9
Norman Wells Canol 30x	# 88	65.29	126.87	</= -4.4	0.00	D	I	57,44,9
Norman Wells Canol 19x	# 88	65.29	126.88	</= -3.8	0.00	D	I	57,44,9
Norman Wells Canol 18x	# 88	65.29	126.87	</= -4.1	0.00	D	I	57,44,9
Norman Wells Canol 7x	# 88	65.28	126.85	</= -4.5	0.00	D	I	57,44,9
Norman Wells Canol 33x	-	65.28	126.84	</= -0.8	0.00	D	I	57,44,9
Norman Wells Bear I 13	# 88	65.26	126.89	</= -4.2	0.00	D	I	57,44,9
Norman Wells Bear I 7	# 88	65.26	126.88	</= -3.8	0.00	D	I	57,44,9
Dahadinni M-43A	# 94	63.88	124.66	</=-1.5	0.00	D	I	58,44,9
Yellowknife	# 66	62.51	114.42	</=1.4	0.00	D	I	57,44,9
Providence A-47	# 70	61.44	117.38	</=0.4	0.00	D	I	57,44,9
Cameron B-13	# 293	60.04	117.05	</=2.6	0.00	D	I	62,9
Lac Cinquante -2	# 294	62.59	98.64	</=-3.6	0.00	D	I	62,9
Lac Cinquante -1	# 294	62.59	98.63	</=-0.1	0.00	I	I	62,9
Cambridge	#85-1	69.12	105.05	</=-12.1	0.00	D	I	26,9
Cambridge	#85-2	69.12	105.05	</=-12.2	0.00	D	I	26,9
Norman Wells	Well 17	65.30	126.75	-1.7	0.00	I	I	37
Norman Wells	Airport Rd	65.30	126.75	-4.2	0.00	I	I	37
Norman Wells	Deadline Rd	65.30	126.75	-1.3	0.00	I	I	37
Norman Wells	Well33	65.30	126.75	-2.6	0.00	I	I	37
Norman Wells	Well 15	65.30	126.75	-3.1	0.00	I	I	37

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Near Ft Providence		61.44	117.38	0.4	0.00	I	I	48c
Sapper Ranges		62.67	128.54	2.5	0.00	I	I	48c
Near Cameron Hill		59.98	117.15	2.7	0.00	I	I	48c
Near Cameron R.		60.36	127.40	2.0	0.00	I	I	48c
Yukon								
North Cath B-62	# 62	66.19	138.69	</=-4.3	0.00	D	I	57,9
MacMillan Pass -1	# 296	63.15	130.25	</=2.4	0.00	D	I	63,9
MacMillan Pass -2	# 296	63.15	130.26	</=1.3	0.00	D	I	63,9
MacMillan Pass -3	# 296	63.15	130.26	</=1.1	0.00	D	I	63,9
MacMillan Pass -4	# 296	63.15	130.25	</=3.7	0.00	D	I	63,9
MacMillan Pass -5	#296	63.15	130.26	</=1	0.00	D	I	18
MacMillan Pass -6	#296	63.16	130.27	</=1.5	0.00	I	I	18
MacMillan Pass -7	#296	63.16	130.27	</=2.2	0.00	I	I	18
MacMillan Pass -8	#296	63.15	130.25	</=3.5	0.00	S	I	18
Howards Pass -1	# 290	62.57	129.54	</=1.5	0.00	D	I	62,9
Howards Pass -2	# 290	62.45	129.40	</=0.9	0.00	D	I	63,9
Red Mountain -1	# 289	60.99	133.76	</=0.8	0.00	D	I	63,9
Red Mountain -2	# 289	60.99	133.75	</=1.6	0.00	D	I	63,9
Red Mountain -4	# 289	60.99	133.75	</=1.6	0.00	D	I	63,9
Red Mountain -7	# 289	60.99	133.75	</=-0.6	0.00	D	I	63,9
Red Mountain -8	# 289	60.99	133.75	</=-0.4	0.00	D	I	63,9
Otter Creek -1	#297	60.35	127.40	</=0.8	0.00	I	I	18
Otter Creek -2	# 297	60.35	127.40	</=2.1	0.00	D	I	63,9
Otter Creek -3	# 297	60.36	127.40	</=1.3	0.00	D	I	63,9
Logtung -1	# 139	60.01	131.60	</=2.3	0.00	D	I	62,9
Logtung -2	# 139	60.01	131.61	</=0.4	0.00	D	I	62,9
Logtung -3	# 139	60.01	131.60	</=-0.1	0.00	D	I	62,9
Logtung -4	# 139	60.01	131.61	</=0.5	0.00	D	I	62,9
B.R. Blow River	-	68.77	137.45	-4.8	0.00	D	I	18
Clinton Creek -1	#112	64.44	140.74	</=-0.2	0.00	D	I	18
Whitehorse Copper -1	#122	60.62	135.05	</=0.8	0.00	D	I	18
Whitehorse Copper -2	#122	60.75	135.13	</=2	0.00	D	I	18
Whitehorse Copper -3	#122	60.75	135.18	</=1.1	0.00	D	I	18
Kay Point -1	#205	69.25	138.36	</=-8.7	0.00	I	I	18
Kay Point -2	#205	69.25	138.33	</=-9.2	0.00	I	I	18
Kay Point -3	#205	69.29	138.39	</=-10	0.00	I	I	18
Kay Point -4	#205	69.27	138.35	</=-11	0.00	S	I	18
Kay Point -5	#205	69.27	138.41	</=-10.5	0.00	I	I	18
Kay Point -6	#205	69.23	138.43	</=-7.9	0.00	I	I	18

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Kay Point -8	#205	69.20	138.34	</=-6.7	0.00	S	I	18
Kay Point -9	#205	69.23	138.41	</=-8.7	0.00	I	I	18
Kay Point -10	#205	69.25	138.50	</=-4.3	0.00	I	I	18
Foothills CS -1	#231	60.81	137.43	</=-0.8	0.00	I	I	18
Foothills CS -2	#231	60.80	135.95	</=1.2	0.00	I	I	18
Foothills CS -3	#231	61.58	134.63	</=-0.5	0.00	S	I	18
Monenco -1	#232	62.02	136.82	</=-0.4	0.00	I	I	18
Monenco -2	#232	62.29	136.24	</=2.7	0.00	I	I	18
Dorsey Lk		60.12	131.61	1.3	0.00	I	I	48c
Near Slate Mtn		60.99	133.75	1.4	0.00	I	I	48c
Near Macmillan		63.15	130.26	2.8	0.00	I	I	48c
British Columbia								
Buckley L.	#10	57.89	130.86	</=1.8	0.00	I	I	26,9
Hotailum	#9	58.16	129.87	</=2.5	0.00	D	I	26,9
Ritchie	#75	56.42	129.15	</=4	0.00	D	I	26,9
Ruby Creek -1	#188	59.71	133.41	</=0	0.00	D	I	26,9
Ruby Creek -2	#188	59.71	133.40	</=2.4	0.00	D	I	26,9
Ruby Creek -3	#188	59.71	133.41	</=1.9	0.00	I	I	26,9
Alberta								
Tathlina Lake	# 292	59.98	117.02	</=2.2	0.00	D	I	62,9
Indian 9-9	# 295	59.85	117.09	</=-4	0.00	D	I	62,9
Zama N	THL1	58.97	118.90	4.5	0.00	I	I	48b,48c
Le Crete	THL2	58.29	116.22	4.0	0.00	S	I	48b,48c
Meander R. Station		58.99	117.66	5.2	0.00	I	I	48b,48c
Meander R.	THL3	58.22	116.03	4.3	0.00	I	I	48b,48c
Le Crete	THL4	58.22	116.03	4.3	0.00	I	I	48b,48c
Near Sutherland Is.	TFM1	57.33	111.69	4.0	0.00	D	I	48b,48c
Near Calumet Lk.	TFM2	57.40	111.82	4.0	0.00	I	I	48b,48c
Near Calumet Lk.	TFM3	57.45	111.99	3.2	0.00	D	I	48b,48c
Near Tea Kettle Ck.	TFM14	56.97	111.85	4.0	0.00	D	I	48b,48c
Near Dunkirk R.	TFM15	56.77	112.49	5.0	0.00	D	I	48b,48c
Near Eight Lake	TFM19	57.51	111.40	4.7	0.00	I	I	48b,48c
Smith	TPR1	55.22	114.07	5.0	0.00	I	I	48b,48c
Winagmi	TPR2	55.62	116.68	5.3	0.00	D	I	48b,48c
Cadotte L.	TPR3	56.50	116.52	5.0	0.00	D	I	48b,48c
Marie L.	TCL1	54.61	110.25	5.8	0.00	D	I	48b,48c
Marie L.	TCL2	54.61	110.25	5.8	0.00	D	I	48b,48c
Cushing L.	TCL3	54.06	110.40	5.7	0.00	D	I	48b,48c

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Cushing L.	TCL4	54.06	110.40	5.7	0.00	D	I	48b,48c
Cushing L.	TCL5	54.06	110.40	5.7	0.00	I	I	48b,48c
Borgone L.	TCL6	54.65	110.51	4.9	0.00	D	I	48b,48c
Esso Seism. St.	TCL7	54.62	110.43	5.6	0.00	I	I	48b,48c
Esso Seism. St.	TCL8	54.62	110.43	5.6	0.00	I	I	48b,48c
Esso T.H. 1	TCL9	54.57	110.46	4.5	0.00	I	I	48b,48c
Lessard	TCL10	54.48	110.63	5.2	0.00	D	I	48b,48c
BPTriad 3	TCL11	54.74	110.71	5.3	0.00	I	I	48b,48c
BPTriad 82-1	TCL12	54.74	110.71	5.3	0.00	I	I	48b,48c
BPTriad W	TCL13	54.74	110.71	5.3	0.00	D	I	48b,48c
Wolf Lk.	TCL14	54.57	110.81	5.7	0.00	D	I	48b,48c
Near Iron River	CL945A	54.47	110.98	5.7	0.00	I	I	48c
Near Iron River	CL945A	54.47	110.98	5.7	0.00	I	I	48c
Metiskow	TSA1	52.41	110.59	5.7	0.00	D	I	48b,48c
Monitor	TSA2	51.79	110.50	7.0	0.00	D	I	48b,48c
Sounding Cr.	TSA3	51.57	110.48	6.7	0.00	I	I	48b,48c
Forty Mile Coube	TSA4	49.69	111.45	9.0	0.00	D	I	48b,48c
Pakowki	TSA5	49.47	110.97	8.2	0.00	I	I	48b,48c
Warner	TSA6	49.38	112.20	7.9	0.00	I	I	48b,48c
NE of Wainwright	S752	52.88	110.79	5.5	0.00	D	I	48a,48c
Vegreville	S753	53.50	112.12	4.8	0.00	I	I	48a,48c
Wainwright Farm	S754	52.72	110.85	5.5	0.00	D	I	48a,48c
Galahad	S755	52.55	111.91	5.6	0.00	S	I	48a,48c
Stettler	S756	52.33	112.76	5.9	0.00	I	I	48a,48c
Stettler	S757	52.32	112.80	6.1	0.00	I	I	48a,48c
Wetaskiwin	S758	52.95	113.22	6.0	0.00	I	I	48a,48c
Rollyview	S759	53.22	113.35	5.5	0.00	I	I	48a,48c
Wetaskiwin	S760	52.99	113.48	5.5	0.00	I	I	48a,48c
Entwistle	S761	53.59	115.00	5.5	0.00	S	I	48a,48c
Edson	S762	53.59	116.41	5.5	0.00	I	I	48a,48c
Tricreek Basin	S763	53.14	117.28	3.6	0.00	I	I	48a,48c
Tricreek	S764	53.11	117.32	3.3	0.00	I	I	48a,48c
Lloydminsister	S765	53.35	110.01	5.4	0.00	D	I	48a,48c
Three Hills	S766	51.68	113.29	5.9	0.00	I	I	48a,48c
Olds	S767	51.77	113.97	5.3	0.00	I	I	48a,48c
Sundrea	S768	51.83	114.65	4.9	0.00	I	I	48a,48c
Barhead	S769	54.04	114.39	5.3	0.00	I	I	48a,48c
Sylvan Lk	S770	52.35	114.23	5.2	0.00	I	I	48a,48c
Marmot Ck Basin	S772	50.96	115.15	3.4	0.00	I	I	48a,48c
Goodwin	S773	55.24	118.25	5.7	0.00	I	I	48a,48c

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Kleskun	S774	55.29	118.46	5.7	0.00	I	I	48a,48c
Woking	S775	55.58	118.86	4.7	0.00	I	I	48a,48c
Hythe	S778	55.40	119.73	4.9	0.00	I	I	48a,48c
Consort	S779	52.09	110.85	5.7	0.00	D	I	48a,48c
Wainwright Airport	S781	52.80	110.85	6.2	0.00	I	I	48a,48c
Botanic Gardens	S782	53.41	113.76	5.7	0.00	I	I	48a,48c
Hubbles Lk	S783	53.58	114.11	6.7	0.00	I	I	48a,48c
Gull Lk.	S784	52.63	114.05	7.5	0.00	I	I	48a,48c
Crestomere	S785	52.74	113.97	6.0	0.00	I	I	48a,48c
Two Hills Farm	S787	53.65	111.82	5.5	0.00	I	I	48a,48c
Truman	S788	54.46	111.29	5.9	0.00	I	I	48a,48c
Rich Lk	S789	54.56	111.58	5.2	0.00	I	I	48a,48c
Sion	S790	53.91	114.10	5.3	0.00	I	I	48a,48c
Vermilion	S791	53.16	110.98	5.1	0.00	I	I	48a,48c
Kirpatric Lk	S792	51.95	111.44	6.0	0.00	I	I	48a,48c
Indian Cabins		59.85	117.09	4.9	0.00	I	I	48c
Saskatchewan								
Echo Lake	#136-1	54.64	102.04	</=2.5	0.00	D	I	26,9
Near Northern Pine		54.45	109.88	4.7	0.00	I	I	48c
Carson Lk		54.64	102.04	1.9	0.00	I	I	48c
Riverhurst		50.88	106.86	3.9	0.00	I	I	48c
Willovale		49.07	106.25	7.6	0.00	I	I	48c
Manitoba								
Thompson	#138	55.73	97.77	</=0.5	0.00	I	I	26,9
Snow L.	#137-1	54.89	99.97	</=1.6	0.00	D	I	26,9
Snow L.	#137-3	54.85	100.13	</=2.8	0.00	I	I	26,9
Lynn L.	#149-1	56.79	101.11	</=1	0.00	I	I	26,9
Fox Lake	#150-1	56.63	101.65	</=2.5	0.00	D	I	26,9
Fox Lake	#150-2	56.63	101.65	</=1	0.00	I	I	26,9
Near Pinawa		50.20	95.92	4.3	0.00	I	I	48c
Manasan Falls		55.73	97.77	1.0	0.00	I	I	48c
Fraser Lk.		56.79	101.12	0.9	0.00	I	I	48c
Boundary Ck		49.02	100.55	7.5	0.00	I	I	48c
Kent Lk.		49.56	99.84	7.7	0.00	I	I	48c
Ontario								
Otoskwin R.	#15	51.83	89.60	</=2.5	0.00	I	I	26,9
Kapuskasing	#12	49.42	82.38	</=5.2	0.00	D	I	26,9

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Cochrane	#11	49.10	80.94	</=6.2	0.00	D	I	26,9
Mariner	#126	50.03	84.28	</=3.5	0.00	I	I	26,9
Minchin L.	#16	50.71	89.60	</=4.5	0.00	D	I	26,9
English R.	#17	49.64	91.32	</=5.2	0.00	D	I	26,9
Hearst	#13	49.69	83.54	</=5.2	0.00	I	I	26,9
Red Lake	#83	51.00	94.20	</=3.4	0.00	I	I	26,9
Near Minchin Lk.		50.71	90.48	3.8	0.00	I	I	48c
Near Coulson Lk		48.90	91.70	4.2	0.00	I	I	48c
Quebec								
Asbestos Hill -1	# 114	61.82	73.97	-6.0	0.00	D	I	59,9
Asbestos Hill -2	# 114	61.80	73.97	</=-7.9	0.00	I	I	60,9
Asbestos Hill -3	# 114	61.82	73.96	</=-4.7	0.00	D	I	59,9
Asbestos Hill -6	# 114	61.82	73.96	-	0.00	D	I	61,9
Asbestos Hill -7	# 114	61.82	73.96	-	0.00	D	I	61,9
Asbestos Hill -8	# 114	61.83	73.95	-5.5	0.00	D	I	62,9
Kenty Lake -1	# 283	61.49	74.44	</=-5.7	0.00	D	I	61,9
Neilson I.	#52	55.40	77.68	</=0.8	0.00	D	I	26,9
Merrill I.	#69	49.89	74.35	</=3.6	0.00	D	I	26,9
Mont Jacques-Cartier	-	48.93	65.92	</=-1	0.00	I	I	32
Great Whale River Basin	GB - 1	55.42	77.33	2.7	0.00	I	I	49,33,9
Great Whale River Basin	GB - 1	55.42	77.33	-1.9	0.00	I	I	49,33,9
Great Whale River Basin	GB - 2	55.17	74.92	1.4	0.00	I	I	49,33,9
Great Whale River Basin	GB - 2	55.17	74.92	1.3	0.00	I	I	49,33,9
Great Whale River Basin	GB - 3	54.88	74.33	0.7	0.00	I	I	49,33,9
Great Whale River Basin	Domanchin	55.50	77.25	0.9	0.00	I	I	49,33,9
La Grande -2	#1	53.44	77.53	4.6	0.00	I	I	50,9
La Grande -2	#2	53.44	77.53	4.3	0.00	I	I	50,9
La Grande -2	#3	53.44	77.62	2.9	0.00	I	I	50,9
La Grande -2	#4	53.43	77.58	3.6	0.00	I	I	50,9
La Grande -2	#5	53.43	77.58	2.6	0.00	I	I	50,9
La Grande -2	#6	53.51	77.71	3.3	0.00	I	I	50,9
La Grande -2	#7	53.51	77.71	1.8	0.00	I	I	50,9
La Grande -2	#8	53.76	77.51	1.5	0.00	I	I	50,9
Newfoundland								
Baie Verte	#152-1	49.91	56.06	</=4.5	0.00	D	I	26,9
Baie Verte	#152-2	49.91	56.06	</=4.6	0.00	D	I	26,9
Baie Verte	#152-3	49.90	56.07	</=4.1	0.00	I	I	26,9
Labrador City	#111	52.95	66.92	</=0.9	0.00	I	I	26,9

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Buchans	#113-1	48.83	56.90	</=6.2	0.00	I	I	26,9
Buchans	#113-2	48.85	56.84	</=5.2	0.00	I	I	26,9

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
SITES WITH TEMPERATURES AVAILABLE AT ONLY ONE DEPTH								
Arctic Islands								
Melville Island	16-1	75.00	110.00	~-17.0	13.00	S	I	28,29
Melville Island	10-2	75.00	110.00	~-17.6	8.10	SU	I	28,29
Melville Island	R240A-1 (PGP)	75.00	110.00	~-17.0	13.00	S	I	28,29
Melville Island	247-3 (PGP)	75.00	110.00	~-16.9	8.65	SU	I	28,29
Melville Island	R245A-2 (PGP)	75.00	110.00	~-17.3	13.00	S	I	28,29
Melville Island	R240A-1-3 (PGP)	75.00	110.00	~-16.1	11.20	S	I	28,29
Melville Island	1-8	75.00	110.00	~-15.9	13.00	S	I	28,29
Melville Island	7-2	75.00	110.00	~-17.1	11.00	S	I	28,29
Melville Island	R239-4 (PGP)	75.00	110.00	~-15.5	13.00	S	I	28,29
Melville Island	2-6	75.00	110.00	~-17.5	10.80	S	I	28,29
Melville Island	D2-5 (PGP)	75.00	110.00	~-16.8	11.40	S	I	28,29
Melville Island	13-2	75.00	110.00	~-16.3	13.00	S	I	28,29
Melville Island	245-1 (PGP)	75.00	110.00	~-16.1	9.15	SU	I	28,29
Truelove Lowlands,Devon Is.	A1) Beach ridge S-slope	75.55	84.67	-16.7	0.00	SU	I	12,43,4
Truelove Lowlands,Devon Is.	A2) -top	75.55	84.67	-16.3	0.00	SU	I	12,43,4
Truelove Lowlands,Devon Is.	A3) -north slope	75.55	84.67	-15.6	0.00	SU	I	12,43,4
Truelove Lowlands,Devon Is.	B) Tundra-meadow	75.55	84.67	-14.8	0.00	SU	I	12,43,4
Truelove Lowlands,Devon Is.	C) Limestone-coast	75.55	84.67	-16.8	0.00	SU	I	12,43,4
Truelove Lowlands,Devon Is.	D) Limestone-inland	75.55	84.67	-14.9	0.00	SU	I	12,43,4
Truelove Lowlands,Devon Is.	E) Granite Gneiss	75.55	84.67	-14.8	0.00	SU	I	12,43,4
Truelove Lowlands,Devon Is.	F) Upland Plateau	75.55	84.67	-14.6	0.00	SU	I	12,43,4
Resolute		74.68	94.90	-12.2 to -13.1	15.2 - 30.5	I	I	8,13
Milne Inlet		72.33	80.50	-12.2	15.20	S	I	8,9,4
Mary River		71.18	79.35	-12.2	9.10	SU	I	8,4
Pangnirtung		66.00	65.50	-8 to -9	0.00	SU	I	36
Iqaluit Permafrost Site	North borehole	63.80	68.50	-9.2	5.00	SU	A	38,4,5
Mackenzie Delta								
Garry Island	1	69.50	135.77	-7.9	0.91	SU	I	47
Garry Island	2	69.50	135.77	-6.8	0.91	SU	I	47
Garry Island	3	69.50	135.77	-7.0	0.91	SU	I	47
Garry Island	4	69.50	135.77	-8.1	0.91	SU	I	47
Garry Island	5	69.50	135.77	-7.8	0.91	SU	I	47
Garry Island	6	69.50	135.77	-7.9	0.91	SU	I	47

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Garry Island	7	69.50	135.77	-6.8	0.91	SU	I	47
Garry Island	8	69.50	135.77	-7.8	0.91	SU	I	47
Garry Island	9	69.50	135.77	-7.7	0.91	SU	I	47
Garry Island	10	69.50	135.77	-7.4	0.91	SU	I	47
Mackenzie Delta		68.32	133.83	-4.6 to -3.1	0 - 30.5	I	I	8,13,4
Mackenzie Delta	Goose Is. south	69.90	135.30	-4.0	ZeroAmp	S	A	25
Mackenzie Delta	Goose Is. north	69.90	135.30	-6.4	ZeroAmp	S	A	25
Mackenzie Delta	Harry Ch #HT286	69.50	134.70	-7.3	ZeroAmp	S	A	25
Mackenzie Delta	Harry Ch #HT277	69.50	134.70	-6.5	ZeroAmp	S	A	25
Mackenzie Delta	Mouth Harry Ch	69.50	134.80	-5.3	ZeroAmp	S	A	25
Mackenzie Delta	Mouth East Ch	69.50	133.80	-3.0	0.00	S	A	25
Mackenzie Delta	Bar Harry Ch	69.50	134.80	-0.5	ZeroAmp	S	A	25
Mackenzie Delta	Harry Ch	69.40	134.90	-2.6	0.00	S	A	25
Mackenzie Delta	Kumak Ch #HT283	69.40	135.30	-2.0	ZeroAmp	S	A	25
Mackenzie Delta	Niglintagak 1593	69.40	135.30	-6.3	0.00	S	A	25
Mackenzie Delta	MiddleCh#Ht273	69.30	135.30	-2.2	ZeroAmp	S	A	25
Mackenzie Delta	Niglintagak Bar	69.30	135.20	-5.1	ZeroAmp	S	A	25
Mackenzie Delta	Aklak channel	69.30	135.20	-1.5	ZeroAmp	S	A	25
Mackenzie Delta	Harry Ch	69.30	135.00	-2.7	ZeroAmp	S	A	25
Mackenzie Delta	Niglintagak#HT276	69.30	135.20	-2.0	ZeroAmp	S	A	25
Mackenzie Delta	Bar Kumak Ch	69.30	135.40	-6.5	ZeroAmp	S	A	25
Inuvik		68.30	133.48	-3.3	7.6 - 30.5	I	I	8,13,4
North Head	C3 100m from Beaufort coast	69.72	134.45	-6.9	0.07	SU	A	37a
Taglu	C4	69.37	134.95	0.7	0.07	I	A	37a
Lousy Point	C5 glaciofluvial ridge	69.22	134.28	-6.2	0.07	I	A	37a
Reindeer Depot	C7 surface of bar in East Channel	68.02	134.14	-6.6	0.07	SU	A	37a
Rengleng River	C8 Alluvial plain	67.79	134.13	-1.2	0.07	SU	A	37a
Other NWT/Nunavut								
Tundra Mines Ltd.		67.43	115.53	-1.7	99.10	I	I	8
Meadowbank River		65.30	95.42	-3.2	8.23	SU	I	10
Norman Wells		65.30	126.82	-3.3 to -1.9	15.2 - 30.5	I	I	8,13
Norman Wells	mainland#495	65.29	126.57	-1.5	ZeroAmp	S	I	27
Norman Wells	Maninland#497	65.28	126.85	-0.8	ZeroAmp	S	I	27
Norman Wells	Bear Is#498	65.26	126.89	-1.5	ZeroAmp	S	I	27
Norman Wells	Bear Is.#496	65.25	126.88	-2.0	ZeroAmp	S	I	27
Contwoyto Lake	Lupin Gold Mine	65.75	111.20	-9.0	0.00	S	I	24,42
Thelon River		64.50	96.70	-5.2	8.23	S	I	10

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Baker Lake	Kiggavik Mine	64.50	97.50	-8.0	0.00	S	I	31,4,5
Thirty Mile Lake		63.50	96.80	-4.9	5.49	SU	I	10
Kazan River		63.04	97.10	-8.8	8.80	SU	I	10
Rankin Inlet		62.82	92.08	-9.4 to -8.3	30.50	I	I	8,13,4
Rankin Inlet	1	62.83	92.00	-7.9	13.87	S	I	10
Rankin Inlet	2	62.83	92.00	-7.9	12.50	S	I	10
Rankin Inlet	3	62.83	92.00	-7.9	4.88	SU	I	10
Rankin Inlet	4	62.83	92.00	-6.4	4.27	SU	I	10
Yellowknife		62.47	114.45	-0.3 to 0.5	0.7 - 2.5	SU	I	8,13
Kogtok River		62.09	97.05	-6.3	6.50	SU	I	10
Fort Simpson		61.87	121.35	1.9 to 0.7	0 - 1.5	SU	I	8,13
Maguse Lake		61.83	95.15	-6.2	15.54	S	I	10
Heninga Lake	1	61.75	96.33	-6.2	15.54	S	I	10
Heninga Lake	2	61.75	96.33	-6.4	14.78	S	I	10
Heninga Lake	3	61.75	96.33	-4.9	14.94	S	I	10
Heninga Lake	4	61.75	96.33	-5.6	14.94	S	I	10
Noomut River		61.50	96.83	-5.4	5.90	SU	I	10
Tha-Anne River		61.02	96.70	-3.9	6.10	SU	I	10
Fort Smith		60.02	111.97	0.0	4.60	SU	I	8,13
Mountain River	C9 alluvial terrace	65.67	126.83	-0.9	0.07	SU	A	37a
Norman Wells	C11 alluvial terrace	65.20	126.46	-0.7	0.07	SU	A	37a
Ochre River	C13 fluvial terrace	63.47	123.69	-0.1	0.07	SU	A	37a
Willowlake River	C14 top of inactive fluvial bar	62.70	123.06	-0.1	0.07	SU	A	37a
Fort Simpson	C15 glaciolacustrine plain	61.89	121.60	0.2	0.07	SU	A	37a
Yukon								
Aishihik (YT)		61.65	137.48	-2.1	6.10	SU	I	8,13
Kay Point -7	#205	69.21	138.39	-7.8	10.00	S	I	18
Alcan Foothills -1	#226	62.53	140.95	-2.6	6.00	SU	I	18
Alcan Foothills -2	#226	62.29	140.77	-2.0	7.00	SU	I	18
Alcan Foothills -3	#226	61.59	139.45	-1.9	6.00	SU	I	18
Alcan Foothills -4	#226	61.45	139.23	-0.8	6.00	SU	I	18
Alcan Foothills -5	#226	61.27	138.84	-1.7	6.00	SU	I	18
Alcan Foothills -6	#226	61.24	138.78	-0.9	6.00	SU	I	18
Alcan Foothills -7	#226	61.72	139.84	-0.9	3.00	SU	I	18
Alcan Foothills -8	#226	61.71	139.84	-0.9	6.00	SU	I	18
Alcan Foothills -9	#226	61.68	139.73	-1.0	5.00	SU	I	18
Alcan Foothills -10	#226	61.51	139.32	-2.5	6.00	SU	I	18
Alcan Foothills -11	#226	61.25	138.80	-1.4	4.00	SU	I	18

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Alcan Foothills -12	#226	60.92	137.87	0.2	6.00	SU	I	18
Alcan Foothills -13	#226	60.85	136.99	1.6	6.00	SU	I	18
Alcan Foothills -14	#226	60.82	136.70	1.3	6.00	SU	I	18
Monenco -3	#232	62.34	136.38	-0.5	10.00	S	I	18
Clinton Creek -2	#112	64.44	140.74	1.2	6.00	S	I	18
Clinton Creek -3	#112	64.44	140.74	0.4	6.00	S	I	18
Clinton Creek -4	#112	64.44	140.74	-5.4	6.00	S	I	18
British Columbia								
Ruby Creek -4	#188	59.71	133.40	1.3	16.00	I	I	18
Alberta								
Fort Vermilion		58.38	116.05	3.8 to 4.3	0 - 1.5	SU	I	8,13
Keg River		57.78	117.83	-0.6 to 0.0	1.50	SU	I	8,13
Saskatchewan								
Uranium City		59.57	108.62	-0.6 to 0.0	9.10	SU	I	8,13
Manitoba								
Churchill		58.77	94.13	-2.5 to -1.2	7.6 - 16.5	S	I	8,13
Kelsey		56.03	96.53	-0.8 to -0.3	9.10	SU	I	8,13
Thompson		55.60	98.70	-0.6 to 0.0	7.70	SU	I	8,13
Churchill	1	58.75	94.05	-2.9	14.94	S	I	10
Churchill	2	58.75	94.05	-2.6	15.54	S	I	10
Churchill	3	58.75	94.05	-0.9	15.54	S	I	10
Churchill	4	58.75	94.05	0.4	14.63	S	I	10
Nejanilini River		59.83	96.50	-6.2	15.54	S	I	10
Quebec								
Asbestos Hill		61.90	73.97	-7.2 to -6.7	<15.24	S	I	51
Asbestos Hill		61.83	73.75	-7.2 to -6.7	15.2 - 61.0	I	I	8,13
Schefferville		54.82	66.68	-0.8 to -0.3	7.6 - 57.9	I	I	8,13
Kangiqsualujjuaq	rock	58.70	66.00	-2.0	ZeroAmp	I	A	46
Kangiqsualujjuaq	Till	58.70	66.00	-2.6	ZeroAmp	I	A	46
Kangiqsualujjuaq	Silt clay	58.70	66.00	-0.3	ZeroAmp	I	A	46
Quaqtaq	Sediment	61.03	69.50	-5.1	ZeroAmp	I	A	46
Quaqtaq	Sedimet	61.03	69.50	-4.8	ZeroAmp	I	A	1,46
Kangiqsujuaq	rock	61.50	72.00	-5.8	ZeroAmp	I	A	1,46

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
SITES WITH TEMPERATURE MEASUREMENTS AT SEVERAL DEPTHS								
Arctic Islands								
Mould Bay A		76.20	119.42	-14.3	1.00	SU	I	3,4,5
Resolute		74.72	94.98	-11.5	1.00	SU	A	3,4,5,9,2
Alert	1	82.50	62.42	-14.0	0.00	SU	A	56
Alert	2	82.50	62.42	-16.4	0.00	SU	A	56
Alert	3	82.50	62.42	-15.7	0.00	SU	A	56
Alert	4	82.50	62.42	-16.5	0.00	SU	A	56
Alert	5	82.50	62.42	-16.0	0.00	SU	A	56
Rea Pt.		75.37	105.75	-16.5	ZeroAmp	S	I	6
Iqaluit Permafrost Site	South borehole	63.80	68.50	-10.5	0.50	SU	A	38
Hot Weather Creek	HWC.STN	79.95	84.44	-16.0	0.00	SU	I	37a
Mackenzie Delta								
Inuvik	I1	68.38	133.73	-1.1	1.00	SU	I	55,67
Inuvik	I2	68.32	133.42	-2.7	1.00	SU	I	55,67
Inuvik	I3	68.13	133.45	-3.0	1.00	SU	I	55,67
Inuvik	I4	69.12	133.43	-2.1	1.00	SU	I	55,67
Inuvik	I5	67.95	133.47	-1.1	1.00	SU	I	55,67
Inuvik	I6	67.50	133.77	-3.8	1.00	SU	I	55,67
Inuvik	I7	68.42	133.87	-3.3	1.00	SU	I	55,67
Inuvik	I8	68.42	133.87	-3.1	1.00	SU	I	55,67
Williams Island	#1	68.73	134.28	-1.2	0.00	S	I	53
Williams Island	#2	68.73	134.28	0.6	0.00	S	I	53
Williams Island	#3	68.73	134.28	-0.3	0.00	S	I	53
Williams Island	#4	68.73	134.28	-3.3	0.00	S	I	53
Williams Island	#5	68.73	134.28	-4.7	0.00	S	I	53
Lousy Point	BH91-6	69.24	134.44	-5.9	1.50	I	I	22
Lousy Point	BH91-8	69.24	134.42	-7.8	1.50	I	I	22
Lousy Point	BH91-10	69.23	134.35	-4.7	1.50	I	I	22
Lousy Point	BH91-11	69.23	134.34	-7.7	1.50	I	I	22
Lousy Point	BH91-12	69.22	134.30	-4.4	1.50	I	I	22
Lousy Point	BH91-13	69.22	134.29	-4.5	1.50	I	I	22
Lousy Point	BH91-15	69.21	134.27	-5.8	1.50	I	I	22
Parsons Lake	C6	68.58	133.55	-7.4	0.05	SU	A	37a
Other NWT/Nunavut								
Fort Smith		60.00	111.88	3.7	1.00	SU	A	3,4,5,9

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Fort Simpson	FS #1	61.79	121.30	0.8	0.00	I	I	57,44,9
Fort Simpson	FS #2	61.70	121.24	1.3	0.00	I	I	57,44,9
Fort Simpson	FS #3	61.64	121.41	1.3	0.00	I	I	57,44,9
Fort Simpson		61.87	121.35	0.9	1.00	SU	I	3,4,5,9,44,2
Yellowknife	1) black rock	62.47	114.45	0.9	5.00	S	I	11
Yellowknife	2) white rock	62.47	114.45	0.6	5.00	S	I	11
Yellowknife	3) red rock	62.47	114.45	1.4	5.00	S	I	11
Yellowknife	4) till	62.47	114.45	1.3	5.00	S	I	11
Yellowknife	5) beach ridge	62.47	114.45	0.6	5.00	S	I	11
Yellowknife	6) burned peatland	62.47	114.45	0.0	5.00	S	I	11
Yellowknife	7) sedge peatland	62.47	114.45	-0.4	5.00	S	I	11
Yellowknife	8) spruce peatland	62.47	114.45	-0.9	5.00	S	I	11
Baker Lake A		64.30	96.00	-6.9	1.00	SU	I	2,3,4,5
Baker Lake	Hole 1	64.167	95.5	-10.18	1.50	SU	A	17a
Baker Lake	Hole 3	64.167	95.5	-8.81	1.50	SU	A	17a
Baker Lake	Hole 4	64.167	95.5	-10.0	1.50	SU	A	17a
Canyon Ck North	84-2A	65.29	126.88	-0.9	1.00	S	A	15
Canyon Ck North	84-2B	65.27	126.52	-3.2	1.00	S	A	15
Canyon Ck South	84-2C	65.22	126.51	-1.9	1.00	S	A	15
Norman Wells Pump Stn	84-1	65.29	126.88	-3.2	1.00	S	A	15
Kee Scarp	HT137	65.31	126.73	1.8	1.00	D	A	15
Great Bear R.	84-3A	64.91	125.58	-2.6	1.00	SU	A	15
Great Bear R.	84-3B	64.91	125.57	-3.3	1.00	S	A	15
Table Mountain	85-7A	63.61	123.64	-2.5	1.00	S	A	15
Table Mountain	85-7B	63.60	123.62	-2.1	1.00	S	A	15
Table Mountain	85-7C	63.60	123.62	-2.6	1.00	S	A	15
Trail River	84-4A	62.08	121.99	2.3	1.00	S	A	15
Trail River	84-4B	62.08	121.99	-0.1	1.00	S	A	15
Manners Ck.	85-8A	61.60	121.09	-1.3	1.00	S	A	15
Manners Ck.	85-8B	61.60	121.09	-1.1	1.00	S	A	15
Manners Ck.	85-8C	61.60	121.09	-0.3	1.00	S	A	15
N Wells PumpStn3	85-9	61.39	120.90	1.7	1.00	S	A	15
Mackenzie Hwy S	85-10A	61.35	120.86	0.7	1.00	S	A	15
Mackenzie Hwy S	85-10B	61.35	120.87	-0.8	1.00	S	A	15
Moraine South	85-11	61.28	120.80	0.0	1.00	S	A	15
Jean Marie Ck.	85-12A	61.19	120.70	0.4	1.00	S	A	15
Jean Marie Ck.	85-12B	61.19	120.70	-1.2	1.00	SU	A	15
Gibson Gap		66.75	127.50	-0.6	1.00	I	A	15
Norman Wells	NW #1	62.35	127.17	-2.4	0.00	S	I	9,17,44
Norman Wells	NW #2	65.25	127.00	-2.8	0.00	S	I	9,17,44

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Norman Wells	NW #3	65.28	126.75	-2.8	0.00	I	I	9,17,44
Norman Wells	NW #4	65.34	127.07	-2.9	0.00	S	I	9,17,44
Norman Wells	NW #5	65.26	126.63	-2.2	0.00	S	I	9,17,44
Norman Wells	NW #6	65.23	127.12	-1.1	0.00	S	I	9,17,44
Norman Wells	NW #7	65.25	126.64	-1.3	0.00	I	I	9,17,44
Fort Good Hope	FGH #1	65.74	128.69	-0.1	0.00	I	I	9,17,44
Fort Good Hope	FGH #2	65.80	129.42	-2.0	0.00	S	I	9,17,44
Fort Good Hope	FGH #3	65.78	128.87	-1.0	0.00	S	I	9,17,44
Fort Good Hope	FGH #4	66.12	129.61	-1.3	0.00	S	I	9,17,44
Fort McPherson site	MP #1	67.43	135.42	-2.5	0.00	I	I	48,44
Fort McPherson site	MP #2	67.43	135.42	-4.8	0.00	I	I	48,44
Fort McPherson site	MP #3	67.43	135.42	-3.4	0.00	S	I	48,44
Great Bear River	C12	64.92	125.58	-2.7	1.50	SU	A	37a
Pump Stn 1	C10	65.28	126.88	-1.8	1.00	SU	A	37a
Tulita (10 km North)	SEEDS control site	64.9	125.58	-0.3	2.00	SU	I	48d
Norman Wells	Hole #7	65.28	126.83	-3.75	0.91	I	I	65a
Norman Wells	Hole #10	65.28	126.83	-3.4	0.91	I	I	65a
Norman Wells	Hole #12	65.28	126.83	-1.2	6.17	I	I	65a
Norman Wells	Hole #13	65.28	126.83	-0.5	6.17	I	I	65a
Norman Wells	Hole #14	65.28	126.83	-0.2	4.00	I	A	17a
Norman Wells	Hole #17	65.28	126.83	0.4	3.12	S	I	65a
Norman Wells	Water Treatment Plant	65.28	126.84	-0.8	4.00	I	A	17a
Norman Wells	Hockey Arena	65.28	126.83	-1.1	4.00	S	A	17a
Manners Ck.	undisturbed site	61.6	120.87	-0.3	1.50	SU	A	35b
Yukon								
Haines Junction		60.75	137.58	2.0	1.00	SU	I	2,3,4,5,9
Watson Lake A		60.07	128.70	3.9	1.00	SU	I	3,4,5,9
Tuichita,Yukon	Peat plateau	61.50	131.00	-0.1	1.10	SU	A	35
Mayo	Glaciolacustrine A	63.58	135.58	-2.3	2.00	SU	A	20
Mayo	Alluvial C	63.58	135.58	-0.7	2.00	SU	A	20
Mayo	Glaciolacustrine B	63.58	135.58	-2.0	2.00	SU	A	20
British Columbia								
Prince George A		53.88	122.67	6.2	1.50	SU	I	2,3,4,5,9
Summit Lake A	Summit Pass	58.63	124.70	-1.1	ZeroAmp	S	A	34,35
Summit Lake B	Upper Testa R	58.66	124.58	1.8	ZeroAmp	I	I	34
Summit Lake C	Lower Testa R	58.67	124.45	0.6	ZeroAmp	S	I	34
Summit Lake D	Mill Ck	58.67	123.99	1.7	ZeroAmp	S	I	34

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Summit Lake E	Steamboat	58.68	123.77	1.9	ZeroAmp	S	I	34
Alberta								
Lethbridge		49.70	112.78	7.9	1.00	SU	A	2,3,4,5,9
Vauxhall		50.05	112.13	8.0	1.00	SU	A	2,3,4,5,9
LaCombe		52.47	113.73	6.5	1.00	SU	A	3,4,5,9
Ellerslie		53.42	113.55	4.9	1.00	SU	I	2,3,4,5,9
Ellerslie Research Stn		53.42	113.47	5.4	0.00	SU	I	65
Vegreville		53.48	112.03	4.5	1.00	SU	I	2,3,4,5,9
Edson A		53.58	116.43	5.3	1.00	SU	I	3,4,5,9
Beaverlodge		55.18	119.37	4.8	1.00	SU	A	2,3,4,5,9
Beaverlodge		55.18	119.38	4.9	1.00	SU	I	30
Slave Lake		55.28	114.77	5.7	1.00	SU	I	3,4,5,9
Peace River		56.23	117.43	4.5	1.00	SU	I	2,3,4,5,9
Fort Vermilion		58.38	116.05	5.4	1.00	SU	I	2,3,4,5,9
Plateau Mtn.	#2	50.20	114.53	-1.1	ZeroAmp	D	A	35
Marmot Basin	#1	53.00	119.00	-1.3	ZeroAmp	S	A	35
Petitot River N	84-5A	59.75	119.50	-0.1	1.00	S	A	15
Petitot River N	84-5B	59.75	119.51	-1.2	1.00	S	A	15
Petitot River S	84-6	59.45	119.25	-0.1	1.00	S	A	15
Plateau Mtn	Blocky slope	50.182	114.503	-6	0.27	SU	A	35a
Plateau Mtn	Loess pocket	50.182	114.503	0.1	0.47	SU	A	35a
Saskatchewan								
Swift Current A		52.25	107.83	5.4	1.00	SU	I	3,4,5,9
Swift Current		50.28	107.80	6.0	1.00	SU	A	3,4,5,9
Swift Current		50.27	107.73	5.7	1.00	SU	I	30
Broadview		50.38	102.58	5.4	1.00	SU	I	2,3,4,5,9
Regina		50.40	104.57	4.7	1.00	SU	I	2,3,4,5,9
Yorkton A		51.22	102.47	4.5	1.00	SU	I	3,4,5,9
Kindersley		51.47	109.17	5.9	1.00	SU	A	3,4,5,9
Outlook		51.48	107.05	6.0	1.00	SU	I	2,3,4,5,9
Wynyard		51.77	104.20	4.3	1.00	SU	A	2,3,4,5,9
Saskatoon SRC		52.15	106.60	6.2	1.00	SU	A	7
Saskatoon		52.15	106.60	6.0	1.00	SU	I	2,3,4,5,9
Hudson Bay		52.85	102.38	5.8	1.00	SU	I	3,4,5,9
La Ronge A		55.10	105.30	5.1	1.00	SU	I	2,3,4,5,9
Cree Lake		57.72	106.28	2.8	1.00	SU	I	3,4,5,9
Manitoba								

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Winnipeg		49.88	97.17	5.4	1.02	SU	I	64
Winnipeg Int'l A		49.90	97.23	6.0	1.00	SU	I	2,3,4,5,9
Whiteshell Nuclear		50.18	96.05	6.1	1.00	SU	I	23
Gimli		50.63	96.98	6.6	1.00	SU	I	3,4,5,9
Pasquia Project		53.75	101.63	5.2	1.00	SU	A	3,4,5,9
Thompson		55.75	97.87	2.8	1.00	SU	A	3,4,5,9
Thompson	A	55.80	97.87	0.9	5.00	SU	I	11
Thompson	B	55.80	97.87	1.3	5.00	SU	I	11
Thompson	C	55.80	97.87	0.2	5.00	SU	I	11
Thompson	D	55.80	97.87	-0.2	5.00	SU	I	11
Thompson	E	55.80	97.87	2.3	5.00	SU	I	11
Charlebois Siding	R69-2-6 Peat Plateau	56.69	94.07	-0.90	1.00	S	I	29a
Charlebois Siding	R69-2-7 Fen	56.69	94.07	1.10	1.00	SU	I	29a
Charlebois Siding	R69-2-11 Peat Plateau	56.69	94.07	~-.9	4.50	S	I	29a
Nelson River	R68-1-1 River Bank	56.48	94.14	~1.6	1.00	S	I	29a
S of Pennycuttaway River	R65-4-3 Peat Plateau	56.10	93.30	-0.70	3.00	S	I	29a
N of Gods River	R59-1-1 Peat Plateau	55.40	92.60	-0.30	6.00	S	I	29a
N of Gods River	R59-1-4 Peat Plateau	55.40	92.60	-0.50	3.00	S	I	29a
Ontario								
Ottawa		45.38	75.72	7.9	1.00	SU	A	2,3,4,5,9
Perch Lake, Chalk R		46.05	77.43	8.7	1.00	SU	I	66
Atikokan		48.75	91.62	7.4	1.00	SU	I	2,3,4,5,9
Kapuskasing		49.40	82.43	6.3	1.00	SU	A	2,3,4,5,9
Quebec								
Ste Anne De Bellevue		45.42	73.98	7.2	1.00	SU	A	3,4,5,9
St Augustin		46.73	71.50	7.8	1.00	SU	I	2,3,4,5,9
Foret Montmorency		47.27	71.17	6.1	1.00	SU	A	3,4,5,9
La Pocatiere		47.35	70.03	7.2	1.00	SU	A	2,3,4,5,9
Val D'or		48.05	77.78	6.5	1.00	SU	A	3,4,5,9
Caplan		48.10	65.68	7.4	1.00	SU	I	3,4,5,9
Normandin		48.85	72.53	6.1	1.00	SU	I	30
Normandin		48.83	72.58	5.8	1.00	SU	A	3,4,5,9
Kuujjuaq A		58.10	68.42	-2.4	1.00	SU	I	2,3,4,5,9
Kangiqsualujjuaq	Tidal Marsh	58.50	65.50	1.2	0.95	SU	A	52
Kangiqsualujjuaq	Till	58.50	65.50	-4.0	0.90	SU	A	52
Kangiqsualujjuaq	Tidal Flat	58.50	65.50	3.2	1.27	SU	A	52

Site Location	Site Identifier	Latitude (°N)	Longitude (°W)	MAGT (°C)	Depth (metres)	Borehole Depth Class	Status	Reference Source(s)
Quaqtaq	rock	61.03	69.50	-4.5	ZeroAmp	S	A	46
Salluit	till	62.25	75.50	-5.9	ZeroAmp	S	A	1,52
Salluit	silt	62.25	75.50	-5.5	ZeroAmp	SU	A	1,52
Salluit	rock	62.25	75.50	-6.5	ZeroAmp	SU	A	1,52
Tasiujaq	rock	58.70	70.00	-2.2	ZeroAmp	SU	A	1,52
Schefferville-3	Timmins 4	54.80	66.82	-0.5	10.00	S	I	37a
Newfoundland								
Goose		53.32	60.42	4.6	1.00	SU	A	2,3,4,5,9
St. John's W		47.57	52.72	6.8	1.00	SU	A	3,4,5,9
Knob Lake		54.75	66.78	2.1	1.00	SU	I	21,9

APPENDIX

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